ADDRESSING CLIMATE CHANGE AT THE COMMUNITY LEVEL: OPPORTUNITIES FOR, AND CHALLENGES TO, MAINSTREAMING SUSTAINABLE DEVELOPMENT

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For Marjorie (Madge) Axon-Hindaugh (06/07/1916 – 09/06/2005), who taught me that even the smallest change can make the biggest difference; and for Amber Axon (22/06/2002 – 25/08/2012).

ABSTRACT

In recent years, the UK has positioned itself to become a global leader in addressing climate change. Alongside this positioning, there has been an increasing emphasis on the role of communities to facilitate and sustain carbon reduction practices. Community-based carbon reduction strategies are one example of action towards achieving sustainability and addressing climate change. Previous research into community-based sustainability projects has highlighted the difficulty of engaging the public with community initiatives and sustaining pro-environmental behaviours. The importance placed on major environmental issues such as climate change necessitates an understanding of how individuals respond to, and engage with, (or even ignore) the issue(s) of addressing climate change.

This study explores public engagements with addressing climate change and community-based carbon reduction strategies, utilising a mixed methodological approach and underpinned by a pragmatic paradigm. The findings in this study demonstrate that there is a shift in public attitudes from whether climate change is occurring and if humans are the cause, to views considering whether and how climate change should be addressed. Whilst few identified formal community projects, collective action and community initiatives are identified as key components of sustainable living. The findings suggest that participants accept the concepts of community projects aiming to facilitate low-carbon living, and are prepared to engage with them on a number of cognitive, affective and behavioural levels, demonstrating intentions to (proactively) participate in such projects. Alongside this, participants suggested that other people's (non)participation and the ability of community-based projects to effectively and meaningfully engage residents would contribute towards sustaining interest and enthusiasm to sustain participation, in ways that residents identify as what works for them. Consequently, projects should continuously engage the public through tailored information and feedback; social events and activities; and create as many opportunities for community members to participate as possible, in ways that they want to become involved.

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PREFACE

The preface to this thesis outlines the reflexive account of the researcher. As outlined by Denscombe (2010), the researcher's self becomes part of the equation, a component which cannot be eliminated as an influence on the end-product findings of the project.

The idea for undertaking a research project at PhD level arose from my personal interests of the interaction between humans and their environment, as well as the research I had conducted for my undergraduate dissertation exploring awareness and attitudes towards mitigating climate change. My undergraduate dissertation (in 2008/09) scratched the surface of my curiosity with public perceptions and responses to environmental issues. This work highlighted the importance of community level initiatives to addressing climate change and sustainable development, and the ways in which people may contribute to a project if one were to be established. My dissertation demonstrated that there is substantial potential for communities to address climate change and transition towards a sustainable future. Following this, I found myself wanting to gain a greater insight into the way people think, what they feel and what they do with respect to addressing climate change at the community level.

In 2009, I registered on to a PhD exploring public attitudes and actions towards addressing climate change and community-based carbon reduction strategies. Enrolling on to a postgraduate research degree was a logical step to explore a dimension of Geography that I am both passionate and fascinated about. I started this PhD at 22 in 2009, after completing my BSc (Hons) Geography with Environmental Management degree. My education at A Level and undergraduate level has influenced my personal stance on environmental issues; that the environment is fragile and that human interaction with the physical environment should not erode natural resources and damage the climate.

I personally believe that climate change is a significant priority that needs to be addressed, effectively and without delay. Exploring people's responses (attitudinal and behavioural) to environmental issues, what they believe should be done to protect the environment and how to engage people in pro-environmental actions is important to conserve the planet for future generations. My fascination with this topic of the attitudes and responses towards addressing climate change at the community level could be summarised in the following quote:

> "Only with an increased understanding of people's motivations… can we begin to understand these [unsustainable] trends, attempt to engage with them, and put them on the right track" (Hargreaves, 2003: 11).

Here, Hargreaves (2003) posits that a greater understanding of people's motivations (their perceptions and responses) towards environmental issues would allow for the development of a transition towards a more sustainable future. The use of the word "engage" is important here. It is only by engaging with the public regarding their responses to addressing climate change and community projects can interventions be implemented to facilitate and sustain a transition towards a low-carbon sustainable future. It is in this thesis that the dimensions of engagement towards community level projects to address climate change are explored in depth. Developing community level responses to environmental issues is an emerging theme in academic literature, not only in geography but other disciplines such as social and environmental psychology, community engagement and social policy. Community level responses to addressing climate change have significant environmental, social and economic advantages, but also present considerable challenges. The multitude of advantages associated with these projects has led to the realisation that community level responses have an untapped potential that could massively alter the ways in which we live, allowing for a transition to sustainable ways of living:

> "A 'world within a world', grassroots innovations are a demonstration that another way is possible, building alternative infrastructures to the existing regime" (Seyfang and Smith, 2007: 594).

The quote above by Seyfang and Smith (2007) demonstrates that community projects have the potential to substantially influence the existing unsustainable regime to encourage and promote a shift towards sustainable consumption and production. Yet, the potential of community-based carbon reduction strategies to reduce emissions can only be fulfilled if a significant number of people engage with, and participate in, the project. However, numerous studies have identified barriers to effectively engage people in these projects.

Despite previous studies exploring the role and potential of community carbon reduction projects in transforming communities towards a sustainable future, I wanted to contribute to this area of research in a new way. In addition to exploring attitudes and actions towards addressing climate change, I also wanted to explore the ways in which people (want, or do not want, to) engage with, and participate in, community carbon reduction projects. In essence, I wanted to explore how people respond to such schemes and the extent to which they are willing to engage with, and participate in, addressing climate change at the community level, and the reasons why.

The submission of this research project does not signify the end. Instead, it signifies the continuation of my journey towards satisfying my curiosity to understanding the ways in which people perceive and respond to addressing climate change, and the start of a much longer journey. This thesis has outlined new and truly interesting results and highlighted new avenues for research. I look forward to pursuing some of these new avenues and continue to develop and contribute towards understanding public perceptions and responses to addressing climate change.

Viva la low carbon revolution!!

ACKNOWLEDGEMENTS

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Firstly, I would like to extend my thanks to my supervisors: Dr Janet Speake and Dr Kevin Crawford for their guidance, constructive comments and support.

Secondly, and importantly, I would like to take this opportunity to thank the respondents and participants who took part in the questionnaires and focus groups, as well as those who accompanied me whilst collecting data for this research. It has been a pleasure to discuss with you your perspectives towards addressing climate change at the community level, and has been the most rewarding parts of my journey as a PhD student.

Thirdly, special thanks to all my family and friends particularly my parents: John and Christine; as well as Vicki and Hannah, for their support and encouragement. Thank you for taking time to accompany me during data collection; support with data entry; reading through this project before submission; and for your helpful perspectives and comments on earlier versions.

I would also like to convey my thanks to Dr Duncan Light (Bournemouth University) and Dr Anya Chapman (Bournemouth University) for their advice and support.

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CONTENTS PAGE

LIST OF FIGURES AND TABLES

LIST OF ABBREVIATIONS

Abbreviation	Meaning of abbreviation
AHGCNP	Ashton Hayes Going Carbon Neutral Project
CBCRS	Community-based carbon reduction strategies
CHDT	Chester and District Housing Trust
CFCs	Chlorofluorocarbons
CO_2	Carbon Dioxide
DECC	Department for Energy and Climate Change
DEFRA	Department for Environment, Food and Rural Affairs
GHG(s)	Greenhouse Gas(es)
IPCC	Intergovernmental Panel on Climate Change
LA(s)	Local Authority/Authorities
PPM	Parts Per Million
TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Action
UK	United Kingdom
UNCED	United Nations Conference on Environment and Development
UNFCCC	United Nations Framework Convention on Climate Change

CHAPTER 1: ADDRESSING CLIMATE CHANGE IN THE UK: THE CURRENT CONTEXT

1.1. INTRODUCTION

There is substantial evidence that the average temperature of the earth's surface is increasing as a result of anthropogenic interactions with the physical environment (Middleton, 2003; Dagoumas and Barker, 2010). Despite the scientific evidence presented by the IPCC, scepticism remains high amongst the public and a minority of scientists, discussed in Section 1.2.2. This thesis subscribes to the evidence presented by the scientific community on climate change indicating that impacts on human and natural systems will be severe and potentially irreparable, unless action is taken to stabilise atmospheric GHG concentrations (Lorenzoni *et al.*, 2007). Where uncertainty remains and contrasting evidence presented, this is discussed in this Chapter and throughout the thesis to ensure the appropriate level of uncertainty is represented in scientific and public considerations of *addressing* climate change.

The impetus for reducing CO_2 emissions is real and present, but its translation into action lacks immediacy and severity (Haxeltine and Seyfang, 2009). The proposed timeframes for redressing the rise of global temperatures are becoming shorter as each new climate change report highlights additional evidence of receding polar ice caps, rates of deforestation and rising sea levels (Moloney *et al.*, 2010). Appeals to reduce individual impacts on the environment are widespread calling for individuals to measure their carbon footprints, recycle more, fly less and buy green products. Central to much of the climate change debate is the consensus that changes to human actions and behaviours is required to transition towards sustainable, low-carbon lifestyles (UK Government, 2005; Ockwell *et al.*, 2009; Moloney *et al.*, 2010).

This chapter provides the context in which this research has evolved. Additionally, this chapter outlines how climate change is contextualised within scientific, political and social facets. Here, action taken by the UK government to address climate change is discussed. UK carbon emissions are rising slightly, not falling (DEFRA, 2007). This chapter suggests why the strategy the UK government has adopted has

not achieved its goal of reducing the nation's carbon emissions as well as failing to engage the public with (addressing) climate change. Additionally, the need for research investigating addressing climate change at the community level and exploring the opportunities for and barriers to mainstreaming sustainable development is outlined. Finally, the research aims and structure of this thesis are presented.

1.2. ADDRESSING CLIMATE CHANGE: THE SCIENTIFIC CONTEXT

1.2.1. Climate Change: Causes and Consequences

Climate change is defined as a statistically significant variation in either the mean state of the climate or its variability, persisting for an extended period (typically decades or longer) (VijayaVenkataRaman *et al.*, 2012). Essentially, 'climate change' refers to current or projected changes in climate whether due to natural variability *or* to human activities (Burroughs, 2007; Houghton, 2009). While the 'natural greenhouse effect' is essential for supporting life, the 'enhanced greenhouse effect' (commonly referred to as 'global warming' or 'human-induced climate change') reflects additional emissions of GHG from human activities, which intensify the greenhouse effect (Burroughs, 2007; Houghton, 2009). The application of carbon intensive methods of energy production and consumption (i.e. burning of fossil fuels), together with widespread deforestation, results in CO_2 emitted into the atmosphere in increasing amounts and more substantially over the past 50 years (Houghton, 2009; VijayaVenkataRaman *et al.*, 2012).

The IPCC provides regular, comprehensive and scientific assessments of the scientific, technical and socio-economic aspects of climate change (Peake and Smith, 2009; IPCC, 2012). Despite progress in our general understanding of climate change, there remains uncertainty about different aspects of climate system dynamics (Houghton, 2009; Peake and Smith, 2009). The IPCC Second Assessment Report (AR2) commented that "humans are having a discernable influence on the Earth's climate". In it's Third Assessment Report (AR3), most of the observed warming of the past 50 years is "attributable to human activities", the IPCC's Fourth Assessment

Report (AR4) stated that "most of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations". Climate scientists argue that such climatic changes are unable to be explained by natural forcings of the climate system alone (Peake and Smith, 2009).

Global average surface temperature has increased by 0.74ºC (+/- 0.18ºC) between 1906 and 2005 (Houghton, 2009). The closing decades of the twentieth century and early years of the present century have been remarkable for the frequency and intensity of weather and climate (Houghton, 2009). Future climate scenarios, based on different technological and socio-economic development paths, suggest that continued emissions of CO_2 could result in global temperature increases of between 1 and 5 degrees (Omer, 2008; Houghton, 2009). Climate change is expected to bring with it significant environmental consequences which include sea level rise, increased frequency of extreme weather events, biodiversity loss, floods, droughts, species extinction and possible stalling of the Gulf Stream (Moriarty and Honnery, 2008; Omer, 2008; VijayaVenkataRaman *et al.*, 2012). The impacts of climate change will also result in environmental refugees, implications for human health such as respiratory diseases, potential global food shortages and influences for national security. Within these contexts, climate change has the potential to exacerbate existing tensions to new extremes or create new pressures. These impacts, in turn, will have a major impact on human life, the built environment and the global economy (Bridgman and Oliver, 2006).

If changes to the climate system were small and occurred slowly enough, society would almost certainly be able to adapt (Houghton, 2009). However, with rapid expansion of the world population and continued use of carbon intensive methods of energy generation, changes in global climate are unlikely to be small or slow (Houghton, 2009). Specific climate models have suggested that continued release of CO_2 into the atmosphere could result in catastrophic consequences in a relatively short time frame, a concept referred to as 'abrupt climate change' (Hulme, 2003; Lorenzoni *et al.*, 2005). Abrupt climate change could occur following significant

tipping points and feedbacks triggering acceleration of climatic change (Hulme, 2003; POST, 2007; VijayaVenkataRaman *et al.*, 2012). Such positive feedbacks (further warming) include release of stored carbon emissions from deforestation whereas tipping points relate to abrupt changes such as the collapse of the Thermohaline Circulation (THC) or West Antarctic Ice Sheet (Hulme, 2003; Lorenzoni *et al.*, 2005; POST, 2007; O'Hare, 2011).

In the absence of efforts to stabilise the rise in carbon emissions, the global average temperature will rise by about a third of a degree Celsius or more every ten years, or three or more degrees in a century, thus resulting in dangerous climate change (Houghton, 2009). Dangerous climate change is highlighted in international climate policy. Article 2 of the United Nations Framework Convention on Climate Change (UNFCCC) sets out the objective to achieve stabilization of GHG concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system (UNFCCC, 1992; Dessai *et al.*, 2004; Lorenzoni *et al.*, 2005). Consequently, substantial reductions of carbon emissions and adaptation is required to avert dangerous climate change. O'Neill and Oppenheimer (2002) infer an upper limit of CO_2 concentrations to 450ppm by 2100 would result in a 1.2–2.3ºC warming. The scientific community generally accepts this degree of warming to prevent the impacts of dangerous climate change. Yet, the concept of dangerous climate change is complex to define and some governments have used this as a rationale for inaction (Dessai *et al.*, 2004; Stern, 2008).

1.2.2. Scientific Uncertainty, Climate Scepticism and Climate Change

The consensus of scientific research supports the conclusion that current shifts in the climate system are a result of human activity (Houghton, 2009). Despite understanding the basic principles of the climate system, the situation is complicated by unexpected climate forcings, feedbacks, regional variations and incomplete understandings of global processes (POST, 2007; Houghton, 2009). Further uncertainties relate to future trajectories of political and social responses to addressing climate change and the impact this has for modelling future climate and its impacts (Burroughs, 2007). Additionally, there are uncertainties relating to how

large warming will be, and the patterns of change in different parts of the world (Burroughs, 2007; Houghton, 2009). One dimension of uncertainty regarding climate change is the difficulty to predict what will happen to regional and local scale atmospheric phenomena (van Aalst *et al.*, 2008; Houghton, 2009). As a result of complex interactions between the climate system and the effects of mitigation strategies, modelling future climates accurately can be problematic.

A minority of scientists and prominent climate sceptics challenge the conclusion that current shifts in the climate system are a result of anthropogenic interactions with the physical environment for a multitude of reasons. Such sceptics and scientists question the accuracy of IPCC climate projections; debate that climate change will have any negative impacts on human systems; or argue natural processes are the cause of current warming trends (Lindzen, 1992; Lindzen, 1997; The Guardian, 2009; Spencer and Braswell, 2011). Yet, some sceptics also publish articles criticising mainstream consensus on climate change in peer-reviewed journals (e.g. Wagner, 2011). Many accuse prominent climate change sceptical scientists of being funded by the oil industry, particularly in the US, to undertake research that challenges the mainstream scientific consensus and its credibility (The Guardian, 2012a).

George Monbiot argues that prominent critics of climate science and policy such as Christopher Monckton and David Bellamy have no scientific training in the field of climate change (The Guardian, 2009). Yet, their comments attempt to rally climate sceptics against policies that attempt to address climate change.

1.2.3. Researching (Addressing) Climate Change

Over the past 20 years, the global climate has steadily warmed and scientific research to understand climate change has also significantly grown (Houghton, 2009). A deeper understanding of current climate change and the mitigation of, and adaptation to, its potential effects are amongst the greatest challenge facing modern society (Grieneisen and Zhang, 2011). In recognition of this, the past four decades have witnessed a striking growth in funding and publication of climate change research (Houghton, 2009; Grieneisen and Zhang, 2011).

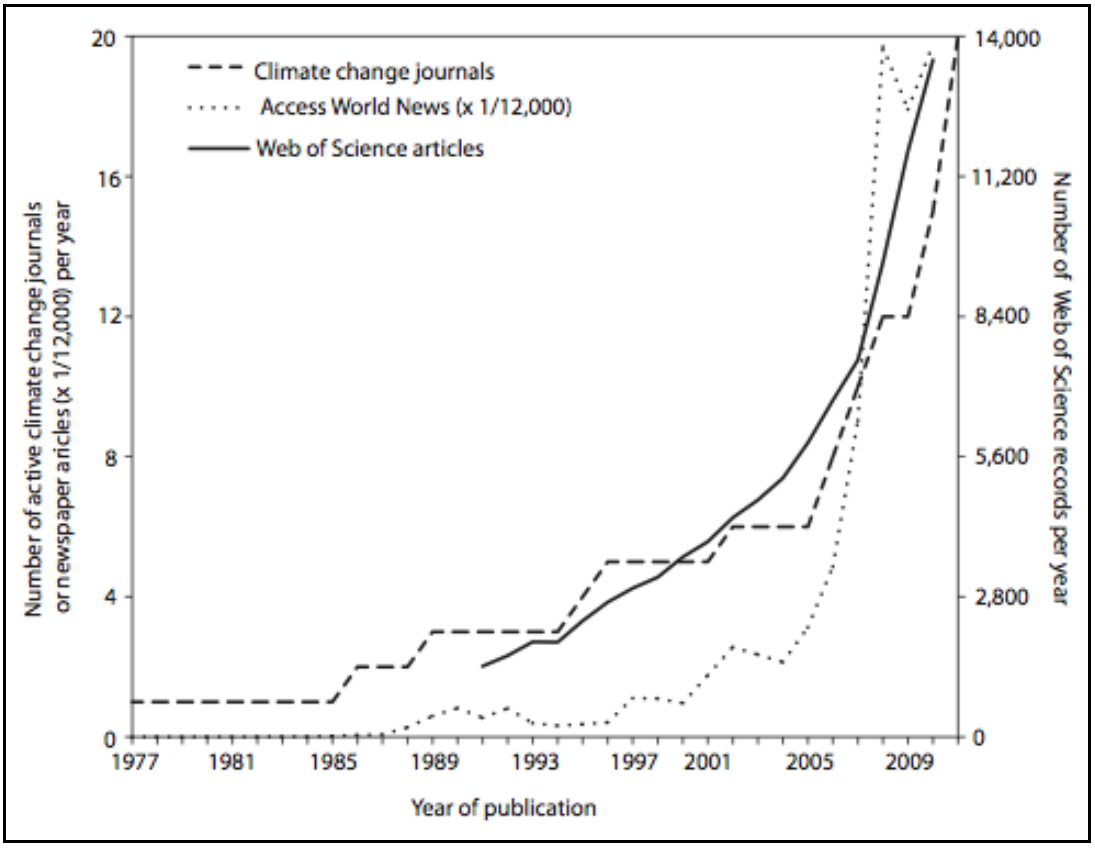


Figure 1.1: The growing footprint of climate change in scientific research and media (Grieneisen and Zhang, 2011).

Figure 1.1 shows that the number of publications per year doubled from 1997 to 2004, and from 2005 to 2009. Almost half of the 110,139 retrieved records were published between 2006 and 2009. Despite the growth of climate change research, uncertainty remains in areas relating to carbon sources and sinks; effect of clouds and oceans and polar ice sheets which affect predictions of sea level rise (Houghton, 2009). Some governments use particular aspects of scientific uncertainty to argue against political and economic action to address climate change (Houghton, 2009). Section 1.3 describes how climate change can be contextualized as a political and economic subject.

1.3. ADDRESSING CLIMATE CHANGE: THE POLITICAL AND ECONOMIC CONTEXT

1.3.1. The Politics of Climate Change

The subject of climate change is as much a political issue as it is a scientific one, and will remain so for the foreseeable future. In the last 40 years, several important milestones have demonstrated the growing importance of climate change and sustainable development (Peter *et al.*, 2006). The subject of sustainability and climate change has risen up the political agenda at the local, national and international level (van Aalst *et al.*, 2008; Middlemiss and Parrish, 2010; Mulugeeta *et al.*, 2010). The IPCC reports can be considered as authoritative statements on the contemporary views of the international science community (Houghton, 2009). As the IPCC is an intergovernmental body, governments are involved in its work. The presentation of climate science is made clear and relevant from the point of view of the politician and policymaker (Houghton, 2009).

Scientific consensus has demonstrated the reality of the threat from climate change and has been fundamental to climate politics (Jager and O'Riordan, 1996; Walker and King, 2008). However, the task to address climate change is extremely complex as the shift away from fossil fuels to more sustainable energy sources faces considerable technical, economic and political challenges and disputes (Omer, 2008; van Aalst *et al.*, 2008; Ockwell *et al.*, 2009).

The issue of climate change has been socially constructed as a pollution problem where UNFCCC international agreements, particularly the Kyoto Protocol, have been focused on reducing emissions (Prins and Raynor, 2007). The evidence presented by the international scientific community in the IPCC assessment reports presents politicians and policymakers with the imperative to act (Houghton, 2009). In 1992, the UNFCCC was signed at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro 1992 (Middleton, 2003; Elliot, 2006; Dresner, 2008). While scientific research has shown beyond reasonable doubt that CO_2 emissions from anthropogenic activities are changing the earth's climate, this

has been insufficient to achieve international agreement on their reduction (van Aalst *et al.*, 2008).

Following the UNFCCC being established, there have been successive Conferences of the Parties (COPs) of which Kyoto was the third (Mathews, 2007). The Kyoto Protocol developed in 1997, specified reduction targets to countries ratifying the convention (Middleton, 2003). These targets differ for each country, dependent on their levels of industrialisation (Mathews, 2007; Houghton, 2009). The world's largest producers of GHGs, China and the US have not ratified the protocol (Mathews, 2007). These countries rely heavily on fossil fuels for energy generation and economic development. Figure 1.2 illustrates three different ways of looking at carbon emissions of major countries and regions in terms of historic carbon emissions (1751-2006), emissions as of 2007 and per capita tonnes of CO_2.

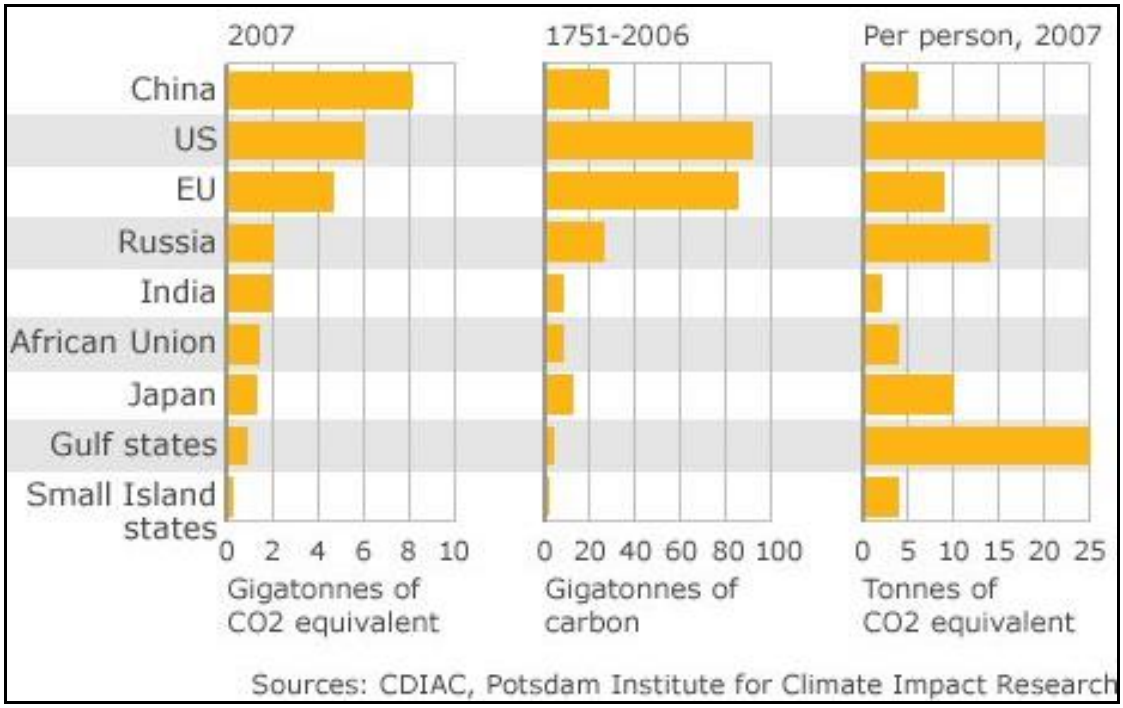


Figure 1.2: Carbon emissions of major countries and regions (BBC News, 2011a).

The Kyoto Protocol has three mechanisms to assist in emissions reductions: Emissions Trading, Joint Implementation and the Clean Development Mechanism (CDM) (Houghton, 2009). Under the Kyoto Protocol, industrialised countries'

emissions will fall by 5%. This will have a marginal impact on mitigating global warming (O'Neill and Oppenheimer, 2002; Prins and Raynor, 2007). However, there are numerous criticisms of the Kyoto Protocol that Prins and Raynor (2007) argue has led to its failure as an instrument leading to significant emissions reductions. Such criticisms relate to the Protocol not going far enough to reduce GHG emissions; some countries allowed to maintain levels or increase levels of emissions; major polluters (i.e. China and India) are not required to reduce emissions; and allowing carbon trading with other industrialised countries removes the incentive for actual carbon reduction (Mathews, 2007; Prins and Raynor, 2007; Tompkins and Amundsen, 2008).

Supporters of the Kyoto Protocol argue that it is an important platform whereby further mechanisms can be implemented to achieve substantial emission reductions (Mathews, 2007). The Kyoto process provides a beginning to a solution at a global level, but not a solution that will drive down emissions far enough or fast enough to solve the climate problem (Mathews, 2007).

Significant challenges remain over the successor of the Kyoto Protocol as it ended in 2012. Debates on the successor have been central to UNFCCC COP meetings in Copenhagen, Cancun and Durban (Axon, 2010; BBC News, 2011b). The UNFCCC Durban conference agreed to a legally binding deal comprising all countries to be prepared by 2015 and to take effect by 2020 (BBC News, 2011c; The Guardian, 2011a; The Guardian, 2011b). This response to address climate change through mitigation and adaptation exemplifies the Precautionary Principle (Middleton, 2003; Elliot, 2006; Dresner, 2008; Houghton, 2009). The Precautionary Principle advocates that human responses to environmental issues should err on the side of caution and take precautionary measures to interact sustainably with the physical environment (Middleton, 2003; Houghton, 2009).

However, some environmental groups have argued for governments to forget the Kyoto Protocol and its successor and move towards a system whereby individual countries take on their own targets for carbon reduction, without the overarching

framework of an international treaty (The Guardian, 2011c). Despite increasing evidence of anthropogenic climate change and its potential impacts, countries such as the USA, China, Canada and India disagree over whether and how it should be addressed (Houghton, 2009; BBC News, 2011b). Consequently, some countries favour a business-as-usual approach.

1.3.2. UK Climate Change Policy: Towards Addressing Climate Change

In recent years the UK has become a leading proponent of global long-term CO_2 emissions reduction target setting and is seen as an international leader (Dagoumas and Barker, 2010; Whitmarsh and O'Neill, 2011). Climate change mitigation and energy security are the UK's core energy and climate policy goals (DEFRA, 2008a; Dagoumas and Barker, 2010). The decline of domestic reserves and production of UK oil and natural gas combined with increasing geopolitical instabilities in fossil fuel production have highlighted the need for a secure and resilient UK energy system (Dagoumas and Barker, 2010). The UK Climate Change Act 2008 aims to facilitate and establish the transition to a low-carbon society and economy which focuses on the long-term target of reducing carbon emissions by at least 80% by 2050 from a 1990 baseline (DEFRA, 2008a; DECC, 2009b; O'Neill and Hulme, 2009; POST, 2010).

The Act, which is the first of its kind in the world, establishes a new approach to managing and responding to climate change in the UK. The Act states that real progress must be made by 2020, with a reduction in emissions of 34% (OPSI, 2009). Carbon budgets place a legally binding 'cap' on the level of allowed UK emissions over five year periods: 2008-2012 (22%), 2013-2017 (28%), 2018-2022 (34%) and 2023-2027 (50%) (Committee on Climate Change, n.d.; DEFRA, 2008a; DECC, 2009b; The Guardian, 2012b). The introduction of carbon budgets as part of the Act will ensure that targets for 2050 and beyond are met (DECC, 2009b). The UK has reduced its GHG emissions by 25.2% in 2010 relative to 1990 levels, a reduction from 779.9 to 590.18 $MtCO_2e$ (DECC, 2009a; DECC, 2012; The Guardian, 2012b).

Under the Kyoto Protocol, the UK must reduce emissions by 12.5% by 2010 relative to 1990 levels. The UK's emissions reduction of 25.2% in 2010 far surpasses the

targets set by the Kyoto Protocol. From 1990 to 2005, emissions fell by 0.5% per year. In terms of carbon reduction on an international level, Russia and Germany exceeded the UK's reduction with 2.7% and 1.3% decrease in emissions respectively (The Guardian, 2012b). During the same period, China's emissions increased by 4.8% and overall, world emissions increased by 1.2% (The Guardian, 2012b). Yet, the UK is heavily reliant on imported goods from China, the emissions of which are not included in official figures. The UK's total carbon footprint including emissions during the production of imports places UK emissions higher now than they were in 1990 (Figure 1.3) (Peters *et al.*, 2012; The Guardian, 2012b).

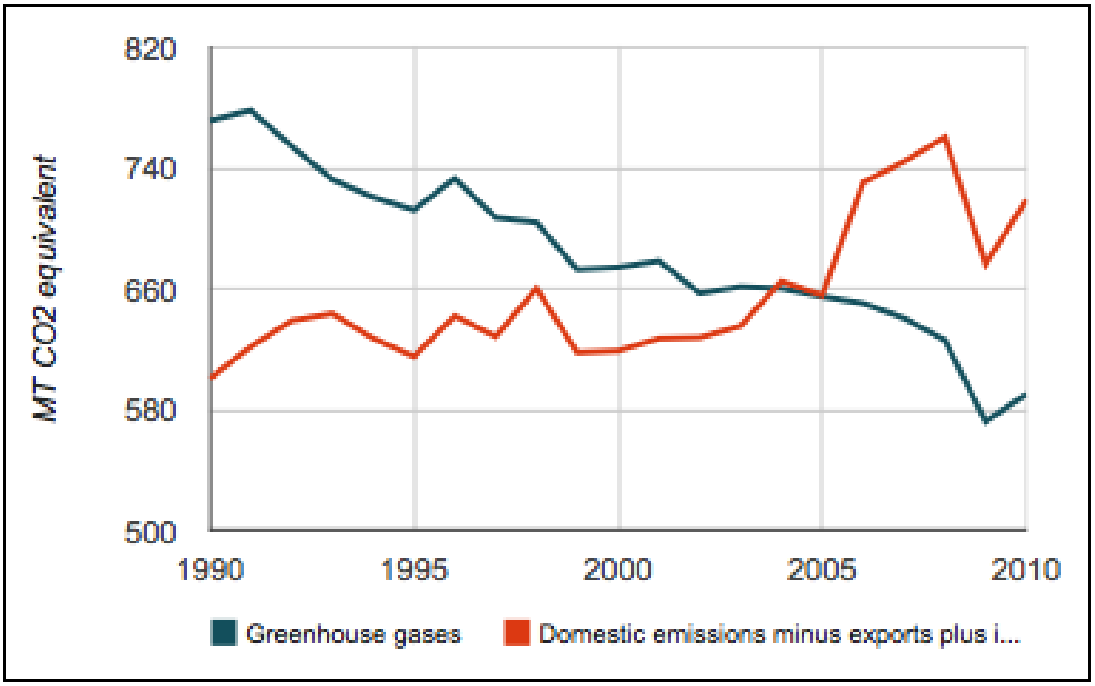


Figure 1.3: Direct emissions versus consumption emissions (The Guardian, 2012b).

Despite these official figures, many of these emissions cuts within the UK to date are not the result of deliberate climate change policy, but of the shift from coal to gas for energy generation from the early 1990s and the economic recession starting in 2008. It is unclear whether climate policies introduced will be sufficient to keep UK emissions falling in line with its future second, third and fourth carbon budgets (The Guardian, 2012b; Peters *et al.*, 2012).

Between 2010 and 2011, carbon emissions decreased in the residential sector by 22% (19Mt), 8% (6Mt) from the business sector, 6% (12Mt) from the energy supply sector and 1% (2Mt) from the transport sector (DECC, 2012). These sectors accounted for 81% of all end-user GHG emissions, of which CO_2 accounted 84% of all UK man-made emissions in 2010 (Figure 1.4) (DECC, 2012). The business sector accounted for 31% of UK GHG emissions, residential sector comprised 27% and the transport sector accounted for 24% (DECC, 2012). Since 1990, emissions from all sectors have decreased: business by 27%, residential by 7% and agriculture by 20%.

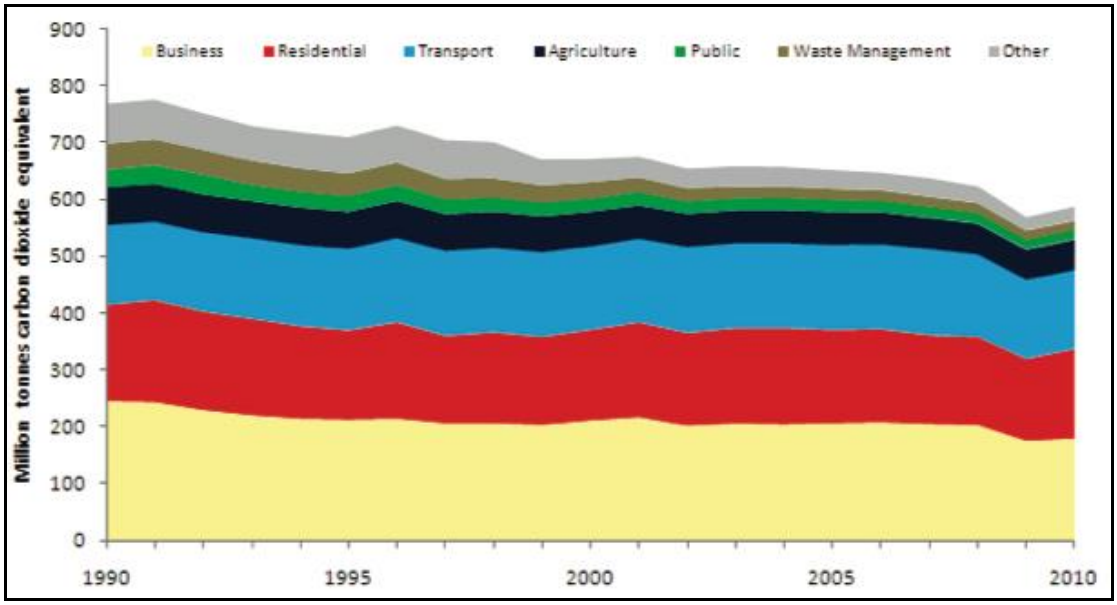


Figure 1.4: GHG emissions by end-user, 1990-2010 (DECC, 2012).

The UK Low Carbon Transition Plan introduced in 2009, highlights how reductions across all sectors could enable carbon budgets to 2020 to be met (DECC, 2009a; DECC, 2009c). The Plan details actions to be taken to cut emissions by 34% by 2020, for example, increased and improved energy efficiency; increased employment in the environmental sector; and electricity to be generated from low-carbon sources such as nuclear power and renewables (DECC, 2009a; DECC, 2009c).

The carbon budgets will be achieved through a range of approaches in the industrial, domestic, transport and commercial sectors (DECC, 2009a; DECC, 2009b). These approaches include public education and advertising campaigns; advice and support

for improving energy efficiency in all sectors; incentives and subsidies for renewable energy technology installation; investment in low-carbon jobs, research and development; and increasing energy generation from renewable and nuclear energy (Pacala and Socolow, 2004; Mathews, 2007; DECC, 2009a; DECC, 2012).

1.3.2.1. Communicating addressing climate change in the UK

Public education and advertising campaigns are a key tool in communicating information on climate change and carbon reduction in order to engage the public with the issue (Filho, 2009; Moser, 2010; Whitmarsh and Lorenzoni, 2010; Whitmarsh *et al.*, 2011). Climate change communications have been frequently employed by DECC and DEFRA to raise awareness of government campaigns or to change attitudes and behaviours (Ockwell *et al.*, 2009; POST, 2010). With respect to enforcing pro-environmental behaviours, economic incentives and disincentives have a superficial and short-term impact on desired behavioural changes (Oskamp *et al.*, 1991; Shaw and Maynard, 2008). Education is used as a method to maintain long-term shifts towards sustainable lifestyles by modifying underlying attitudes, beliefs and values (Stern, 2000; Barr and Gilg, 2005).

Awareness raising alone is not sufficient to modify behaviour (Barr and Gilg, 2005). Whitmarsh and Lorenzoni (2010) state that how climate change is communicated and understood, and whether and how it is responded to, the methods and media used to communicate the issue are now less diverse than the range of communicators or audiences. The heterogeneity of audiences, media, messages and contexts of communication undermines any presumption that communicating climate change is a simple task, or that communication will lead to any (or predictable) outcomes in terms of understanding or behaviour (Whitmarsh and Lorenzoni, 2010).

To date, the UK Governments' efforts to promote low-carbon actions have principally focused on using communication campaigns to foster greener attitudes and behaviours amongst the public, for example: "Helping the earth begins at home" (Hinchliffe, 1996); "Are You Doing Your Bit?" (Barr and Gilg, 2005; Ockwell *et al.*,

2009); “Act on CO2” and “Bedtime Story” (POST, 2010). Such campaigns have aimed to raise awareness of climate change, the role of energy consumption and use in causing it as well as encouraging individual and household measures to reduce carbon footprints. However, Lofstedt (1995) and Hinchliffe (1996) indicate that these media campaigns have been largely ineffective in promoting understanding, engagement with the issue or changing behaviour.

While awareness of climate change and its main causes is high, few perceive it as direct and substantial threat (Whitmarsh, 2009a). Public responses highlight that the responsibility for tackling climate change rests with governments and organisations rather than individuals and communities (Ockwell *et al.*, 2009; Whitmarsh, 2009a). The UK Government’s strategy to reduce energy consumption through economic incentives and awareness raising campaigns have been ineffective (Barr *et al.*, 2003; Barr and Gilg, 2005; Ockwell *et al.*, 2009) for a number of reasons which Whitmarsh and Lorenzoni (2010) argue, can be understood in terms of inappropriate models of communication and behaviour.

Box 1.1: Understanding the failure of UK government communication campaigns

The UK Government’s awareness raising campaigns are underpinned by the information deficit model of communication (Wynne, 1991), which assumes that the public are ‘empty vessels’ waiting to be filled with useful information and scientific facts, which they will rationally act upon (Irwin and Wynne, 1996; Ockwell *et al.*, 2010). Such campaigns are underpinned by the assumption that the public lack a proper understanding of the relevant facts and consequently, people fall back on irrational fears of the unknown and mystical beliefs (Sturgis and Allum, 2004). Decision-making is often more complex than what traditional, linear models assume (Ockwell *et al.*, 2010). Consequently, Ockwell *et al.* (2010) suggest that a new approach based on a better understanding of how to engage people in terms that are personally meaningful (e.g. through bottom-up, non-expert climate perceptions rather than top-down, expert understandings) (O’Neill and Hulme, 2009).

The information deficit model of communication has led to controversy over the role of scientific knowledge influencing public understanding of, and attitudes towards, scientific principles for a multitude of reasons (Sturgis and Allum, 2004). The model assumes that the public require scientific facts as previous studies have highlighted that the public’s understanding of science is low (Durant *et al.*, 1989; Sturgis and Allum, 2004). Qualitative research highlights that individuals apply scientific information to meet their particular needs, which creates a disparity between what

individuals want to know and what scientists believe the public should know (Sturgis and Allum, 2004). The model disregards the interactive nature of communication whereby audiences of messages interpret and validate information (Sturgis and Allum, 2004). However, new information is interpreted in the context of prior knowledge, understandings and values and adapted to fit into existing cognitive and social frameworks (Marshall, 1995; Michael, 1996; Sturgis and Allum, 2004). These cognitive and social frameworks influence how information is perceived and evaluated and whether that information is accepted or rejected (Festinger, 1957; Sturgis and Allum, 2004). Moreover, the information deficit model underestimates the diversity of audiences reflecting diverse beliefs, values, interests and experiences (Wynne, 1991).

UK Government communication strategies are based on the assumption that an awareness of the environmental and economic benefits of energy conservation will result in sustainable, low-carbon behaviours. These communication strategies are referred to as AIDA (Awareness-Information-Decision-Action) model of individual behaviour (Barr and Gilg, 2005). Such campaigns are underpinned by the understanding that behaviour is preceded by a process of rational decision-making based on obtainable information (Jackson, 2005; Darnton, 2008). Environmental behaviour ought to be conceptualised in terms of a wide range of influencing factors (Ajzen, 1991; Stern, 2000; Jackson, 2005; Darnton, 2008; Heimlich and Ardoin, 2008; Verplanken, 2011). Such influencing factors include personal values, attitudes, habits and social norms (Jackson, 2005; Darnton, 2008; Heimlich and Ardoin, 2008; Verplanken, 2011). It is for these reasons that UK Government communication campaigns have failed to meaningfully engage the public with addressing climate change.

Ockwell *et al.* (2010) suggest a constructive approach of making climate change information relevant to individuals may be to relate it to local environmental issues, personal concerns and emphasising additional benefits to reducing emissions such as saving money, improved air quality and personal health and fitness. Targeting information to particular audience needs is the foundation of effective communication, particularly when individuals are considering transitions to low-carbon alternatives (Ockwell *et al.*, 2010). Communication campaigns must meaningfully engage individuals in all three facets of engagement: understanding, emotion and behaviour.

1.3.3. The Economics of Climate Change

Walker and King (2008) argue that the economic perspective has differed from the scientific consensus on climate change with economists favouring delayed action and

technological solutions. This attitude towards addressing climate change from economists reflects the belief that mitigation and adaptation strategies will damage the global economy (Walter and King, 2008). The Stern Review on the economics of climate change argues that delaying effective response to climate change may be politically easier in the short term, but will entail higher overall costs and more disruption to the climate system (Stern, 2007; Stern, 2008). The conclusions regarding economic policy on climate change have shifted from "do little, later" to "take strong action urgently, before it is too late" (Barker, 2008; Stern, 2008). The economic risks of a business-as-usual approach to climate change are very severe (Dietz *et al.*, 2007; Stern, 2007).

The Stern Review proposes that 1% of global GDP per annum is required to avoid dangerous climate change (Stern, 2007). In 2008, this estimate was doubled in light of faster than expected variations in the climate system (Stern, 2008). Without action, the overall costs to address climate change will be in excess of five percent of global GDP per annum (Stern, 2007). The Stern Review argued that leaving climate change to continue unabated would cost the world 20% of GDP per annum (Stern, 2007; Walker and King, 2008).

The Stern Review suggests that the benefits of effective and stringent climate mitigation and adaptation outweigh the costs and risks of delayed action (Stern, 2006; Walker and King, 2008; Dagoumas and Barker, 2010). Despite these challenges, effective implementation of mitigation and long-term adaptation strategies can also create numerous opportunities: alternative energy supplies and security, job creation in the environmental sector, improved air quality and higher standards of living (Midilli *et al.*, 2006; Stern, 2007; Walker and King, 2008; Laukkonen *et al.*, 2009). Governments and the public have accepted the economics of the Stern Review as mainstream economic thinking on climate change (Dietz *et al.*, 2007; Barker, 2008). Whilst some economists see the report as biased and counterproductive (Nordhaus, 2007; Weitzman, 2007), policymakers see The Stern Review as an authoritative report that makes an economic case for substantial

reductions in GHG emissions (Yohe and Tol, 2008). To address climate change, The Stern Review advocates carbon pricing through tax and trading (Stern, 2007).

In terms of the costs of addressing climate change, Enkvist *et al.* (2007) list a multitude of methods. Figure 1.5 illustrates that anything below the axis saves money, whilst anything above the axis costs. These approaches, taken together, would be enough to stabilise atmospheric concentrations of GHGs below 450ppm (Enkvist *et al.*, 2007; Walker and King, 2008). Using each method highlighted in Figure 1.5 to its fullest potential would mean that the costs of addressing climate change would be around 0.6% of GDP. The next two decades are the only possible window of opportunity to address climate change. After that, the time to stabilise GHG levels and avoid dangerous climate change will have passed (Walker and King, 2008).

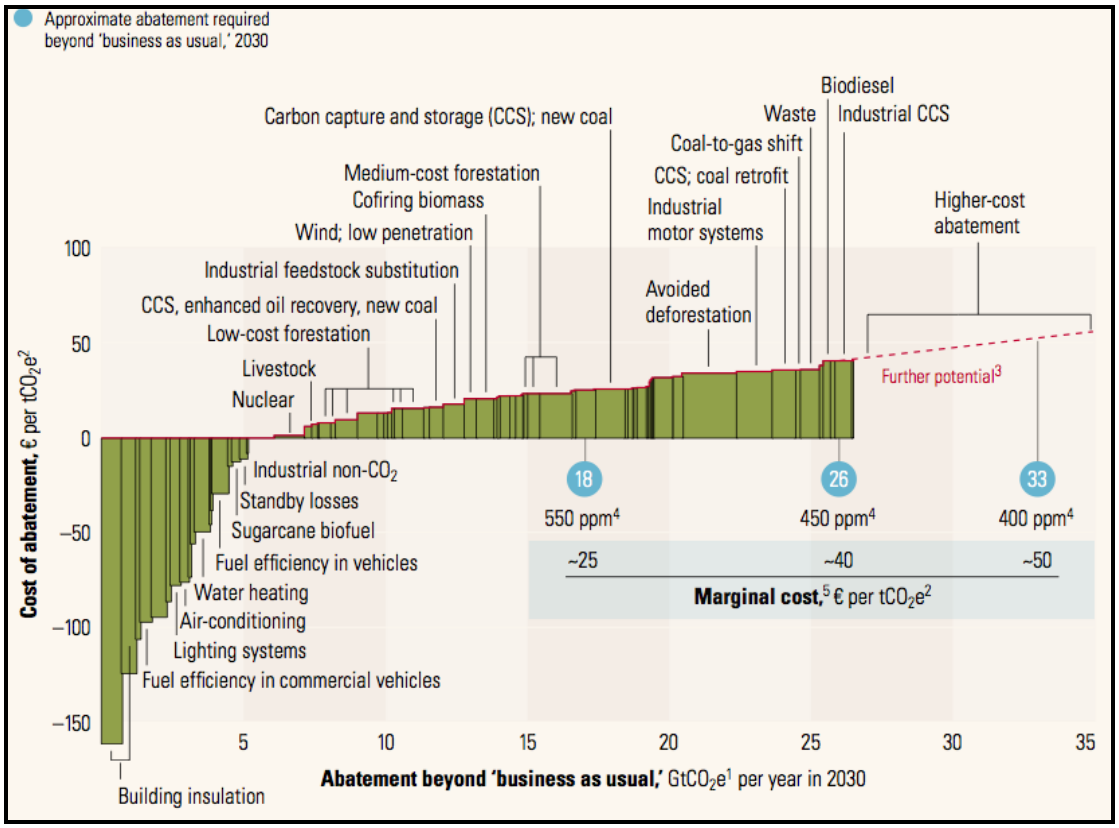


Figure 1.5: The costs of reducing GHG using different technological approaches (Enkvist *et al.*, 2007).

"A different kind of economics is conceivable. People can flourish without more stuff. A new vision of governance does make sense. Another world is possible." (Jackson, 2011: 171).

Box 1.2: A new economics for addressing climate change

Jackson (2011) argues that the recent economic crisis presents politics, economics and society with a unique opportunity to invest in change and replace short-term thinking with considered policymaking capable of addressing climate change. For a new economics for addressing climate change, Jackson (2011) suggests three recommendations: (1) establishing clear resource and environmental limits and integrating these limits into both economic and social functioning; (2) fixing the economic model and developing a new macro-economics for sustainability (that does not rely on relentless consumption growth and expanding material throughput); and (3) changing the social logic whereby people are not locked-in to materialistic consumerism.

Identifying clear resource and emission caps and establishing reduction targets under those caps is vital for a sustainable economy (Jackson, 2011). Effective mechanisms for achieving those targets under these caps should be set in place and once established, these limits should be integrated into a convincing economic framework (Jackson, 2011). Jackson (2011) argues in favour of an ecological tax reform resulting in a shift in the burden of taxation from economic goods (e.g. incomes) to ecological bads (e.g. pollution). This principle has been implemented to varying degrees across Europe but meaningful progress remains slow. Investment in assets, infrastructures and jobs are a key component of a new ecological macro-economics which include: ecosystem maintenance and protection; renewable energy technologies; retrofitting buildings with energy and carbon saving measures; public transport infrastructures; and public spaces (Jackson, 2011).

The UK Low Carbon Transition Plan advocates these approaches in order to transition to a sustainable, low-carbon economy. Jackson (2011) argues that society needs to unravel the culture and change the social logic of consumerism. This, however, requires sustained and systematic effort. Offering people viable alternatives to the consumer way of life is vital. Progress depends on building up capabilities for people to flourish in less materialistic ways (Jackson, 2011).

1.4. ADDRESSING CLIMATE CHANGE: THE SOCIAL CONTEXT

1.4.1. Climate Change and Society

During the 1990s, the serious nature of environmental problems caused by human activities received substantial attention in order to develop methods to orient human behaviour towards sustainability (Bonnes and Bonaiuto, 2002). The urgency

of a societal response to climate change was recently reinforced by the IPCC review of the most up-to-date science on climate change stating that global warming is "unequivocal" (IPCC, 2007; Ockwell *et al.*, 2009). Oskamp (2000: 496) states that:

> "…human actions are producing many harmful and possibly irreversible changes to environmental conditions that support life on Earth… urgent changes in human lifestyles and cultural practices are required for the world to escape ecological disaster."

Despite the UK's commitment towards addressing climate change, emissions have risen slightly above 1990 levels instead of substantial reductions (DEFRA, 2007; Peters *et al.*, 2012; The Guardian, 2012b). The Act has profound implications for individual choices and actions as Government recognises the urgent need to encourage individuals to adopt sustainable, low-carbon lifestyles (Ockwell *et al.*, 2009). Individuals and communities have an important role in carbon reduction. The UK's 21 million homes are responsible for 27% of CO_2 emissions and given that 86% of those homes will be around in 2050, there is a significant need for changing energy related behaviours and improving energy efficiency in these buildings (Boardman, 2004; Druckman and Jackson, 2008; SDC, 2010a).

The issue of climate change is fundamentally an ethical issue (Gardiner, 2004; The Guardian, 2012c). Climate change has the potential to influence human activities, the way humans live and how lifestyle decisions are made (Bridgman and Oliver, 2006). The consequences of climate change will also impact on life itself (Houghton, 2009). Thus, climate change poses a serious challenge to modern society. As the issue of addressing climate change is closely related to economic development and current lifestyles, it is also a very contentious issue (Tjernstrom and Tietenberg, 2008; Houghton, 2009). Addressing climate change will involve transitions towards sustainable lifestyles and rethinking our ways of living (Houghton, 2009; Taskforce on Sustainable Lifestyles, 2010).

Whitmarsh and Lorenzoni (2010) comment that interest in societal engagement by policy-makers with climate change goes beyond support (or demand) for climate policy, to encouraging individual behaviour change in terms of mitigation and adaptation. Technological solutions alone are insufficient to address climate change, therefore the public must engage with energy conservation practices at the individual level and engage with community and political action in order to create sustainable, resilient and low-carbon societies (Whitmarsh and Lorenzoni, 2010). Society must meaningfully engage to undertake high-impact carbon reduction behaviours (Lorenzoni *et al.*, 2007; Whitmarsh and Lorenzoni, 2010). Thus, climate change is as much a socio-cultural issue as it is a scientific and political one (Whitmarsh and Lorenzoni, 2010).

1.5. ADDRESSING CLIMATE CHANGE

Within scientific, political, economic and social contexts that climate change should be addressed. Climate change is a serious challenge and significant threat to modern society that needs to be tackled effectively without delay (Moriarty and Honnery, 2008; Tjernstrom and Tietenberg, 2008; VijayaVenkataRaman *et al.*, 2012). Addressing the issue of climate change and its global impacts is seen as a major priority, particularly in those parts of the world where people are unable to afford the infrastructural responses that are required to tackle climate change (George and Page, 2004; Axon, 2010). The most common strategies aim to reduce the impacts of climate change (mitigation) and to cope with the impacts of climate change (adaptation). In other words, mitigation aims to avoid the unmanageable and adaptation aims to manage the unavoidable (Laukkonen *et al.*, 2009).

1.5.1. Addressing climate change at the community level: The role of sustainable lifestyles and community-based carbon reduction strategies

Within the context of anthropogenic environmental change such as biodiversity loss and climate change resulting from the unsustainable use of non-renewable resources that a transition to sustainable lifestyles is proposed (Gilg and Barr, 2005; Jackson, 2005; Barr and Gilg, 2006; Barr and Shaw, 2011; Barr *et al.*, 2011a; Barr *et al.*, 2011b). The area of lifestyle choice has largely been ignored and regarded as too

subjective, ideological and value-laden, or simply too intractable to be amenable to policy intervention (Taskforce on Sustainable Lifestyles, 2010). Sustainable lifestyles are defined as:

> "...rethinking our ways of living, what we buy and how we organise our everyday lives. It is also about altering how we socialise, exchange, share, educate and build identities. It means transforming our societies and living in harmony with our environment" (Taskforce on Sustainable Lifestyles, 2010: 9).

For sustainable lifestyles to become the norm within society, they must be enabled and encouraged by the socio-technical systems and institutions that surround us (Geels, 2002; Geels and Schot, 2007; Taskforce on Sustainable Lifestyles, 2010). Given the rise of local sustainable development and the emphasis placed on individual actions for sustainability, incorporating a range of behavioural responses is necessary for transitions towards sustainable, low-carbon living (Barr and Gilg, 2006).

Community-based carbon reduction strategies (CBCRS) are one example of action towards achieving sustainable development, self-sufficiency and addressing climate change (Alexander *et al.*, 2007). Essentially, CBCRS aim to facilitate, increase and maintain sustainable, low-carbon living through interventions at the local level (Abrahamse *et al.*, 2005; Alexander *et al.*, 2007; Heiskanen *et al.*, 2010; Middlemiss and Parrish, 2010; Mulugeeta *et al.*, 2010). These initiatives address the interconnected issues of climate change and sustainability which constitute a growing interest in a socially-driven innovation platform, bringing together citizens to act collectively in creative ways on energy and climate issues (Heiskanen *et al.*, 2010; Mulugeeta *et al.*, 2010). Community-based initiatives aiming to facilitate the adoption of sustainable lifestyles are exemplified in the UK Low Carbon Transition Plan 2009 as an integral component of reducing carbon emissions in order to move to a low-carbon society and meet the carbon reduction targets set by the UK Climate Change Act 2008 (DECC, 2009a; DECC, 2010a).

There are many examples of community level or community-led initiatives worldwide that are achieving numerous environmental, social and economic advantages by addressing climate change and if scaled-up would play a significant role in climate stabilisation efforts (Mulugeeta *et al.*, 2010; Seyfang, 2010). The importance placed on community level initiatives addressing climate change necessitates an understanding of the factors affecting public engagement with, and participation in, CBCRS.

1.6. RESEARCH QUESTIONS AND STRUCTURE OF THE THESIS

The UK is considered an international leader for addressing climate change and with the introduction of the UK Climate Change Act 2008, is committed to achieving significant reductions of CO_2 emissions (DEFRA, 2008a; Whitmarsh and O'Neill, 2011). Community-based action facilitating the adoption of sustainable lifestyles is considered to be an integral component of the UK Governments' strategy (DECC, 2009a; DECC, 2010a). It is within this context that this research principally explores addressing climate change at the community level through implementing CBCRS:

> "Understanding and responding to climate change covers issues of great complexity... Above all, it requires an understanding and an involvement of citizens: their motives, their behaviour and their values" (Hulme and Turnpenny, 2004: 112-3).

This thesis explores attitudes and actions towards addressing climate change and engagements with, and participation in, CBCRS. This study is underpinned by a pragmatic paradigm and utilises a mixed methodology comprising of questionnaires and focus groups (Tashakkori and Teddlie, 2003; Bryman; 2008; Newing, 2011). By focusing on the relationship between addressing climate change and CBCRS, this research represents an original approach to understanding how the public comprehends and responds to both.

Formulating research questions are a critical component of research design (Bryman, 2008; Blaikie, 2010). It is through these questions that choices about the focus and

direction of the research can be created and a successful outcome can be achieved (Bryman, 2008).

Box 1.3: Research questions addressed in this thesis

1. What are the varying attitudes residents hold towards (addressing) climate change?
2. What measures do residents, in community-based carbon reduction strategies and communities without carbon reduction strategies, utilise to reduce their carbon emissions and bring about low-carbon, sustainable living?
3. To what extent are residents aware of, and accept, community-based carbon reduction strategies in their local communities?
4. In what ways do/would residents engage with addressing climate change within their local communities? Additionally, why do/would individuals participate or do/would not participate in a community approach to reduce carbon emissions?

1.6.1. Contribution to knowledge

Scientific, political and social campaigns state that an immediate transition is required towards sustainable lifestyles and CBCRS (Jackson, 2005; Barr and Gilg, 2006; Moloney *et al.*, 2010; Barr and Shaw, 2011; Barr *et al.*, 2011a; Barr *et al.*, 2011b; Jackson, 2011). This makes it necessary to explore ways to evaluate existing CBCRS and use these evaluations to inform policies, the development of current and future community-based sustainability initiatives and encourage sustainable, low-carbon lifestyles (Moloney *et al.*, 2010). While community initiatives encouraging pro-environmental attitudes and behaviour change clearly have a place in addressing climate change, the role of such initiatives and the potential challenges associated with this role are not considered in depth in the literature to date (Moriarty and Honnery, 2008; Middlemiss and Parrish, 2010).

Understanding the social acceptability of CBCRS and their wider impacts is therefore a timely and important challenge within the context of UK carbon reduction targets and the rise of community-based approaches that aim to address sustainability and climate change (Seyfang, 2010; Warren and McFadyen, 2010). The establishment of CBCRS has been unsystematic in the UK and for this to become a widespread mode of carbon reduction practice, better understanding of public attitudes and

acceptability towards community-based and community-led initiatives is required (Rogers *et al.*, 2008). There has been little empirical investigation in this area and it is important to learn how and why local residents envisage taking on the role of participant in a CBCRS (Rogers *et al.*, 2008; Warren and McFadyen, 2010). This thesis aims to address these gaps in the academic literature and extend the knowledge base in these areas.

Whitmarsh and Lorenzoni (2010) state that when compared with the more established natural science tradition of climate change research, research on the social dimension of climate change is lagging. Exploring addressing climate change at the community level can offer vital insights into understanding (and potentially influencing) people's responses to (addressing) climate change (Whitmarsh and Lorenzoni, 2010).

Despite the growth of community-based sustainability initiatives, there has been to date very little empirical research into the development and character of such programmes, the impacts they have achieved and the barriers to be overcome (Seyfang, 2009). Seyfang (2010) argues that the challenge is to better understand and harness the creative energies of community-led solutions that address climate change and adapt them for wider mainstream settings. This research seeks to extend the knowledge base and explore these gaps within current academic research on CBCRS seeking to facilitate, increase and maintain sustainable lifestyles.

1.6.2. Structure of the thesis

The structure of this thesis broadly corresponds to the chronological order that was adopted throughout the research. Table 1.1 outlines the structure of the chapters within this thesis.

Table 1.1: Structure of the thesis

Chapter Title	Overview of the Chapter
Chapter 2: Public awareness of, attitudes and actions towards, and engagement with, addressing climate change at the community level	Chapter 2 presents a review of literature relating to public awareness of, attitudes and behaviour towards, and engagement with addressing climate change and CBCRS in the UK. This chapter also illustrates the relationship between public attitudes and behaviour with sustainable lifestyles in terms of facilitating and sustaining behaviour change.
Chapter 3: Opportunities for, and challenges to, enabling community-based carbon reduction strategies for mainstreaming sustainable development	Chapter 3 presents a review of the literature on addressing climate change and mainstreaming sustainable development in terms of establishing community-based carbon reduction strategies. This chapter discusses and evaluates the development of CBCRS and assesses the opportunities for and barriers to establishing such community projects. The chapter situates addressing climate change in the UK and establishing CBCRS within the context of sustainable development.
Chapter 4: A philosophy and methodology for investigating addressing climate change at the community level	Chapter 4 presents the philosophical and methodological approach of this thesis and is situated within the context of the philosophy of research. This chapter reviews and evaluates the literature on research paradigms and methodological approaches. Chapter 4 provides a justification for the choice of a pragmatic paradigm to underpin this study. Additionally, this chapter outlines the methodology for this research and provides an overview of questionnaire survey and focus group techniques as well as a justification as to why these methods are being used for a study on addressing climate change at the community level. This chapter goes through the development of the methodology and a rationale for the choice of the communities chosen in this study.
Chapter 5: Understanding awareness of, and attitudes towards, addressing climate change	Chapter 5 analyses results from the first and second stage of data collection: questionnaire surveys and focus groups that explore attitudes and actions towards the issues of addressing climate change (including carbon reduction and sustainable living).
Chapter 6: Exploring behavioural responses	Chapter 6 explores respondents' behavioural responses towards addressing climate change,

towards addressing climate change: Opportunities for, and barriers to, sustainable living	and highlights the measures residents are willing to take and the frequency actions are undertaken. Additionally, this chapter explores participants' understandings of sustainable lifestyles and their considerations towards whether their own lifestyles are sustainable.
Chapter 7: Engaging with addressing climate change at the community level: acceptability of, and participation in, community-based carbon reduction strategies	Chapter 7 analyses results from questionnaires and focus groups, aiming to explore engagements with, and participation in, CBCRS. This chapter also discusses the awareness and acceptability of CBCRS that aim to facilitate a transition towards low-carbon, sustainable living.
Chapter 8: Addressing climate change at the community level	Chapter 8 provides a conclusion to, this PhD thesis drawing together the implications of the study's findings and presents these within the wider context of the academic literature relating to addressing climate change at the community level. This chapter draws the thesis together in terms of how this research has contributed to the academic literature and provides recommendations for policy makers and communities in terms of addressing climate change at the community level.

CHAPTER 2: PUBLIC AWARENESS OF, ATTITUDES AND ACTIONS TOWARDS, AND ENGAGEMENT WITH, ADDRESSING CLIMATE CHANGE AT THE COMMUNITY LEVEL

2.1. INTRODUCTION

Along with the positioning of the UK as a global leader in addressing climate change, there has been an increasing emphasis on the role of communities to facilitate, increase and sustain carbon reduction practices. With over one-third of many developed nations' carbon emissions attributed to domestic energy use and private travel (Whitmarsh *et al.*, 2011), individuals and communities have a key role in a transition towards a low-carbon, sustainable society and future (Peters *et al.*, 2010; Seyfang, 2010; Whitmarsh and O'Neill, 2011). Individuals can act in various ways to promote a low-carbon society, such as voting for "green" policies; purchasing energy efficient appliances; or promoting and campaigning for a low-carbon future (Whitmarsh and O'Neill, 2011).

The proposed timeframes for redressing the rise of global temperatures are becoming shorter as each new climate change report highlights additional evidence of receding polar ice caps, rates of deforestation and rising sea levels. Consequently, there have been calls from scientists, environmentalists, politicians and the public for this issue to be addressed. This is not a simple task as policy-makers face a multitude of challenges to raising awareness; changing attitudes and actions; and implementing projects that require meaningful engagement.

The path towards sustainability demands changes in human behaviour. The importance placed on major environmental issues such as climate change necessitates an understanding of how individuals respond to and engage with (or ignore) addressing climate change. An exploration of these attitudes and actions are valuable to an understanding of society within which climate change policies and strategies will evolve over time (Burch, 2010). A comprehensive understanding of both individual psychological factors and the systems, standards and norms under

which individuals operate is fundamental to the development of successful initiatives to shift towards CBCRS (Moloney *et al.*, 2010).

Addressing climate change at the community level incorporates understanding public engagement with, and participation in, addressing climate change and CBCRS. Chapter 3 reviews the research conducted to date on enabling community action to address climate change. This chapter provides an in-depth understanding of the factors that influence public attitudes and actions towards addressing climate change and engagement with, and participation in, CBCRS.

2.2. AWARENESS AND UNDERSTANDING OF (ADDRESSING) CLIMATE CHANGE

Whitmarsh (2009a) states that there is widespread awareness of the issue of climate change with 99% of the public in England having heard of "climate change" or "global warming". Two-thirds of the British public say they know "a fair amount" or "a great deal" about "global warming" contrasted to 59% who claim this level of knowledge relating to "climate change" (Whitmarsh, 2009a). Similar findings were reported by DEFRA (2009), suggesting 61% of people claim to know "a lot" or "a fair amount" regarding climate change. Additionally, 72% state that they are "well informed" about the causes, impacts and solutions of climate change, around 20% more than the EU27 average who state this (Eurobarometer, 2009). Peters *et al.* (2010) questioned respondents in London about their knowledge about climate change and lifestyle changes. Although 55.5% indicated that they knew a lot about environmental issues, fewer respondents stated they regularly converse with family and friends about responses to climate change, persuade others to become more environmentally friendly and make suggestions for improvements in the workplace (Peters *et al.*, 2010). There remains a significant majority (over one-fifth) who state they know little or nothing about the issue (Whitmarsh, 2009a).

DEFRA (2009) reported that 48% believe that their behaviour and lifestyle contribute to climate change; 85% agree that climate change is caused by energy consumption; yet 21% argue that the effects of climate change are too far ahead in the future to concern them. These findings demonstrate that there is general acceptance that

climate change is a human-caused problem with the majority of people correctly identifying that deforestation and release of carbon emissions are contributors of climate change however, when asked unprompted regarding the causes and consequences of climate change, understanding is shown to be lower (Whitmarsh, 2009a).

Public understanding regarding the causes and consequences of climate change vary according to the methodology used. There is variation in awareness of terminology due to the media's tendency to refer to "global warming" instead of "climate change", the latter the preferred term by climate scientists (Boykoff and Boykoff, 2007; Liu *et al.*, 2008; Whitmarsh, 2009a). However, this appears to have disappeared in the last three years, perhaps reflecting a shift in media vocabulary towards the preferred scientific term "climate change" (Upham *et al.*, 2009). Box 2.1 indicates particular segments of the population with increased awareness and knowledge concerning (addressing) climate change.

Box 2.1: Segments of the population with increased awareness and knowledge of climate change

Awareness and knowledge of climate change is higher amongst men, graduates and young or middle-aged people (Anker-Nilssen, 2003; Eurobarometer, 2009). Men have been found to be more aware of the causes and consequences of climate change, while women identify 'incorrect causes' such as ozone depletion and mobile phone use (O'Connor *et al.*, 2002). Those with a higher level of formal education and income are more likely to have heard of climate change (DEFRA, 2007), and to know that sea levels will result from climate change (Eurobarometer, 2009).

People with a formal science qualification are more likely to understand the process through which climate change works (Hargreaves *et al.*, 2003). These findings are consistent with reported higher levels of interest and knowledge about science issue in general amongst men and those with a higher level of education (Durant *et al.*, 1998; Hargreaves *et al.*, 2003).

With respect to age, fewer 18-25 year olds (63%) have heard of 'climate change' than 45-64 year olds (78%) (Upham *et al.*, 2009). Similarly, awareness of the causes and impacts of climate change is generally lower amongst the under-25 and over-65 age groups (Hargreaves *et al.*, 2003). Perhaps reflecting greater coverage of climate change in broadsheet readers, tabloid readers tend to claim less knowledge about climate change than broadsheet readers (Hargreaves *et al.*, 2003).

More generally, Anker-Nilssen (2003) reports that people with more formal

education appear to be more aware of, and concerned, about environmental issues. Younger people seem more likely to be engaged in the environment than their elders, and maybe as a result of younger people now becoming more educated then previous generations (Anker-Nilssen, 2003).

More specifically, research by DEFRA (2007) found over half of participants know nothing about the terms "carbon footprint" or "carbon offsetting", and 14% know nothing about "carbon emissions". Amongst young people, awareness of "carbon emissions" is also much lower than "climate change" (33% and 3% respectively have not heard the terms) (Upham *et al.*, 2009). Few people (10%) have used a carbon calculator work out their carbon footprint and there is confusion with associated terminology (i.e. 'carbon' and 'carbon dioxide') (Upham *et al.*, 2009).

2.2.1. Knowledge about the causes of climate change

Table 2.1 indicates trends in beliefs about the causes of climate change in the UK, and their relative change over time.

Table 2.1: Trends in belief about causes of climate change

Source	Population	Date of data collection	Believe CC is mainly due to human activities	Believe CC is purely natural phenomenon	Agree CO_2 is a cause of CC
DETR (1993)	Adults: England and Wales	1993	X	X	62%
DETR (1997)	Adults: England and Wales	1996/7	X	X	53%
DEFRA (2002)	Adults: England	2001	71%	13%	71%
Downing and Ballantyne (2007)	Adults: Britain	2002	44%	9%	X
Downing and Ballantyne (2007)	Adults: Britain	2006	46%	9%	X
COI (2008)	11-17 year olds: England	2006	53%	13%	X

BBC (2007)	Adults: UK	2007	66%*	17%*	X
COI (2008)	11-17 year olds: England	2008	60%	9%	X
*Respondents were asked whether climate change is 'the result of human activity or another reason'					

When respondents are not provided with a checklist of possible causes, their understanding of climate change is shown to be lower (consistent with the recognised risk of acquiescence bias in survey research). Norton and Leaman (2004) found that only 30% of Britons named carbon dioxide as the main gas contributing to climate change, while Whitmarsh (2009a) found only 9% identified carbon emissions explicitly. When unprompted, UK and international publics tend to identify the more generic cause 'air pollution' (Lorenzoni *et al.*, 2006; Whitmarsh, 2009a). Additionally, the public understands climate change as part of a broader set of social and environmental issues (i.e. industrialisation, consumption and over-population) (Kempton, 1991; Darier and Schule, 1999; Bord *et al.*, 2000).

An additional feature of the public's understanding of the causes of climate change is a limited awareness of the relative contribution of multiple activities to climate change (Upham *et al.*, 2009). Specifically, there is an underestimation of the role of domestic energy use; meat eating/production; food miles and waste (Upham *et al.*, 2009). When prompted, 20% of people in England identify energy use in the home as a contributor to climate change (DEFRA, 2002); and unprompted, only 0.5% indicate domestic energy consumption as a cause (Whitmarsh, 2009a).

Beyond this, there is also a tendency to underestimate one's own contribution to climate change, and identity other people or countries, such as SUV drivers, organisations, the US or China (Lorenzoni and Pidgeon, 2006; Whitmarsh, 2009a), and with more 'distant' activities namely deforestation and industry (Nicholson-Cole, 2005). This disconnection between individual actions and climate change is reflected in British media coverage of the issue (Hargreaves *et al.*, 2003). Energy is not associated with negative environmental consequences. The pollution mental model that frames understanding of climate change obscures the role of invisible and

seemingly non-polluting human activities including domestic energy use (Kempton, 1997; Upham *et al.*, 2009). This underestimation of personal and domestic energy use in contributing to climate change may reflect a strategy of reducing cognitive dissonance by denying responsibility for addressing climate change (Section 2.4.3) (Lorenzoni and Langford, 2005; Upham *et al.*, 2009).

2.2.2. Knowledge about the consequences of climate change

When asked unprompted, UK publics most commonly identify changes in weather, including increased temperatures, rainfall and extreme weather events (Lofstedt, 1995; Kempton, 1997; Lorenzoni *et al.*, 2006; Whitmarsh, 2009a; Tobler *et al.*, 2012). Qualitative studies indicate a lack of distinction between weather and climate (Kempton, 1991), and many perceive changes in weather to be already occurring (Kempton, 1997; Darier and Schule, 1999) and hold this to be proof of climate change. The public is most interested in seasonal and weather change, which reflects media coverage discussing climate change in the context of local weather-related stories, such as flooding (Hargreaves *et al.*, 2003; Upham *et al.*, 2009). Two-thirds of the public in England agree that recent flooding is due to climate change (DEFRA, 2002).

As with understanding the causes, the public tend to identify generic impacts that would potentially affect all life, rather than local or human-specific impacts (Lorenzoni *et al.*, 2006). This is consistent with findings by Whitmarsh (2009a), reporting that 60% of responses about impacts related to generic impacts (e.g. changing weather, flooding and sea level rise); compared to 11% specifically relating to organisms (e.g. species extinction); and 19% to humans (e.g. agricultural impacts and spread of disease). Respondents do not use personalised language, indicating that climate change tends to be seen as a collective rather than a personal problem (Upham *et al.*, 2009). The terms “climate change” and “global warming” are associated with different impacts (Box 2.2).

Box 2.2: Differing knowledge of impacts according to terminology (Whitmarsh, 2009a).

Whitmarsh (2009a) reports that knowledge of impacts differ according to terminology. For example, the term "global warming" is more associated with:

- Heat-related impacts, particularly temperature increases, melting icebergs and glaciers;
- Human causes including pollution, carbon dioxide and other GHGs, CFCs, fossil fuel consumption, cars/traffic fumes, and overuse or misuse of earth's resources;
- Ozone depletion and increased ultraviolet light penetration of the atmosphere;
- Trapping of heat or gases within the atmosphere and the "greenhouse effect".

Whereas the term "climate change" is more readily associated with:

- A range of impacts on climate and the weather, including hotter summers and wetter winters;
- Increased rainfall and drought, and impacts on agricultures/food supply;
- Impacts that have already been observed;
- Natural causes.

It appears that the scientifically less correct term ("global warming") is more familiar and emotive for the public (Whitmarsh, 2009a; Upham *et al.*, 2009). This has implications for research and communicating with the public with related issues (i.e. the two terms should not be used interchangeably) (Upham *et al.*, 2009a).

2.3. ATTITUDES AND CONCERN TOWARDS (ADDRESSING) CLIMATE CHANGE

Attitudes are hypothetical constructs, that are not directly observable but are measurable variables, that refer to an individual's evaluation, or orientation towards a particular attitude 'object', i.e. a person, idea, group or action (Crisp and Turner, 2007; Upham *et al.*, 2009). It is often considered that attitudes precede behaviour and guide our choices and decisions for action (Ajzen, 1991; Hogg and Vaughan, 2008; Upham *et al.*, 2009; Ajzen, 2011). Attitudes are relatively permanent; they exist across time and situations with each attitude consisting of a range of feelings, likes and dislikes, ideas, thoughts and behavioural intentions (Hogg and Vaughan, 2008), yet they can fluctuate and change in response to information, behaviour and events (Upham *et al.*, 2009).

Attitudes comprise three components: affect (emotional response), behaviour (past and current responses) and cognition (knowledge and beliefs), and form as a result of direct experience with the attitude object or through second-hand information with it, the former resulting in more consistent attitudes than the latter (Hogg and

Vaughan, 2008; Upham *et al.*, 2009). Attitudes may have a particular intensity and direction, indicating that individual's may hold strong or weak attitudes, which may be positive or negative (Crisp and Turner, 2007; Upham *et al.*, 2009). Attitudes may also be ambivalent towards, and hold both positive and negative attitudes (Hogg and Vaughan, 2008; Bonnes *et al.*, 2011). A range of factors can determine the strength of an attitude including certainty; importance; emotional intensity; and involvement (Upham *et al.*, 2009). Pre-existing attitudes have been shown to bias perceptions as individuals are more attentive to, and accepting of, attitude-consistent information and tend to ignore or reject dissonant information (Nickersen, 1998; Upham *et al.*, 2009).

2.3.1. Attitudes towards climate change

Concern about climate change has increased over the past two decades; however climate change is still accorded a low priority in the context of other environmental issues (Poortinga and Pidgeon, 2003; Ockwell *et al.*, 2009; POST, 2010). Although there is variation across surveys (Table 2.2), around 80-85% of people report feeling worried about climate change (Upham *et al.*, 2009). Similarly, most people consider climate change to be a "bad thing" rather than a "good thing", and have a negative affective response to climate change (Lorenzoni *et al.*, 2006).

Table 2.2: Trends in concern about climate change/global warming (Upham *et al.*, 2009).

Source	Population	Date of data collection	"Very worried" (and "fairly worried") about CC/GW	CC/GW a "very serious" (and "serious") problem
DETR (1993)	Adults: England and Wales	1993	35%	X
DETR (1997)	Adults: England and Wales	1996/7	35%	X
DEFRA (2002)	Adults: England	2001	43% (34%)	X
GlobeScan (2006	Adults: Britain	2003	X	50%
GlobeScan (2006)	Adults: Britain	2006	X	70%

COI (2008)	11-17 year olds	2006	10% (40%)*	X
COI (2008)	11-17 year olds	2008	11% (46%)*	X
*The COI study specifically asked about worry in respect of climate change in this country				

Within the context of other issues, health, security and social issues feature higher in the public's concerns than environmental issues (Bord *et al.*, 2000; Poortinga and Pidgeon, 2003), with only 11% of UK citizens identifying environment/pollution as one of the three issues affecting their quality of life, while more cite money, health, crime, employment, and neighbours (DEFRA, 2002). While 84% consider climate change to be "fairly" or "very" important to their current and future quality of life, most social and local environmental issues are rated as more important (DEFRA, 2002). This is unsurprising as global risks tend to be underestimated due to a natural need to concentrate on more immediate, local risks (Slovic *et al.*, 1979; Upham *et al.*, 2009). More recently, terrorism and the economy are viewed as more important than climate change (Norton and Leaman, 2004; Eurobarometer, 2009).

Whilst the issue of climate change is considered socially relevant, most individuals do not feel that climate change poses a prominent threat (Giddens, 2009; Ockwell *et al.*, 2009). In some cases, it may not be one of the public's main environmental concerns (Poortinga and Pidgeon, 2003; Whitmarsh, 2009a); disposal of hazardous waste, air pollution, and loss of plants and animals have been rated higher (DEFRA, 2002). Climate change/global warming is ranked lower than local environmental issues such as air pollution and littering (Whitmarsh, 2009a). Recently, climate change was the second most worrying environmental issue, after local air pollution (Eurobarometer, 2008). The impacts and low ranking of climate change reflects a widespread perception amongst the public that the issue is removed in time and space, rather than personally relevant, affecting future generations and other countries (Ockwell *et al.*, 2009; POST, 2010).

The conceptual link between weather and climate change (Section 2.2.2) can lead to the dismissal of climate change as benign or unproblematic (Kempton, 1997). Conversely, public concern over climate change may only occur during periods of

unusual or particularly hot weather, and wane at other times (Read *et al.*, 1994). This highlights the difficulty in communicating long-term, global risks when people tend to define risks more locally (Upham *et al.*, 2009). Box 2.3 highlights where concern varies amongst different demographic groups.

Box 2.3: Concern towards climate change amongst different demographics (Upham *et al.*, 2009).

Upham *et al.* (2009) note that concern towards climate change varies amongst different demographic groups. Women and middle-aged people tend to be more concerned about climate change (Anker-Nilssen, 2003), and are more likely to be "very worried" about climate change (DEFRA, 2002), and view it as a serious threat (Norton and Leaman, 2004). This is consistent with broader environmental problems and risks, which indicate that women are generally more concerned than men (Anker-Nilssen, 2003).

Education has varied impacts. Research indicates that graduates are more likely to feel that the environment and pollution affects their quality of life. However, compared to those with no qualifications, concern about climate change is slightly lower amongst graduates (44%) than those without qualifications (47%) (DEFRA, 2002; Upham *et al.*, 2009). Broadsheet readers tend to be more concerned than tabloid readers, reflecting the attention given to the issue by each type of newspaper (Hargreaves *et al.*, 2003).

Those with higher pro-environmental values are more concerned about climate change (Poortinga *et al.*, 2002). Additionally, those with left-wing political views see climate change as more serious than those on the right (Dunlap and McCright, 2008). Those who feel more informed about the issue consider it to be a more serious problem (Dunlap and McCright, 2008).

However, concern by age is more ambiguous. Recent studies indicate that younger people are less concerned than older age groups about climate change, and the environment in general (Anker-Nilssen, 2003; COI, 2008; Upham *et al.*, 2009). Older people tend to see climate change as a less serious problem than do younger groups (Eurobarometer, 2009), maybe because they feel they will be less affected but also due to greater scepticism about climate change (Section 2.3.3) (Upham *et al.*, 2009). This gap in knowledge suggests a need for research to explore (the reasons for) concern towards climate change amongst different age groups (Upham *et al.*, 2009).

While negative affect (e.g. concern, pessimism) is a common emotional response, there are some sections of the public who are more optimistic, along with others who are apathetic and ambivalent (Upham *et al.*, 2009). For example, some people identify positive impacts such as wine growing as a beneficial impact of climate change (DETR, 1997). Ambivalence is common. A quarter of respondents consider

climate change is “neither good or bad”, while the largest proportion (38%) rate it as “fairly bad” (Poortinga and Pidgeon, 2003). Compared to European countries, the UK public shows lower concern (45% cite it as the most important global issue in the UK, compared to 50% across the EU27), and are also more pessimistic (40% agreeing that nothing can be done to stop it, compared to 31% across the EU27) (Eurobarometer, 2009; Upham *et al.*, 2009).

Lorenzoni and Langford (2005) define four different perspectives towards climate change, dependent on whether respondents accept human-induced climate change and view it as important (Figure 2.1).

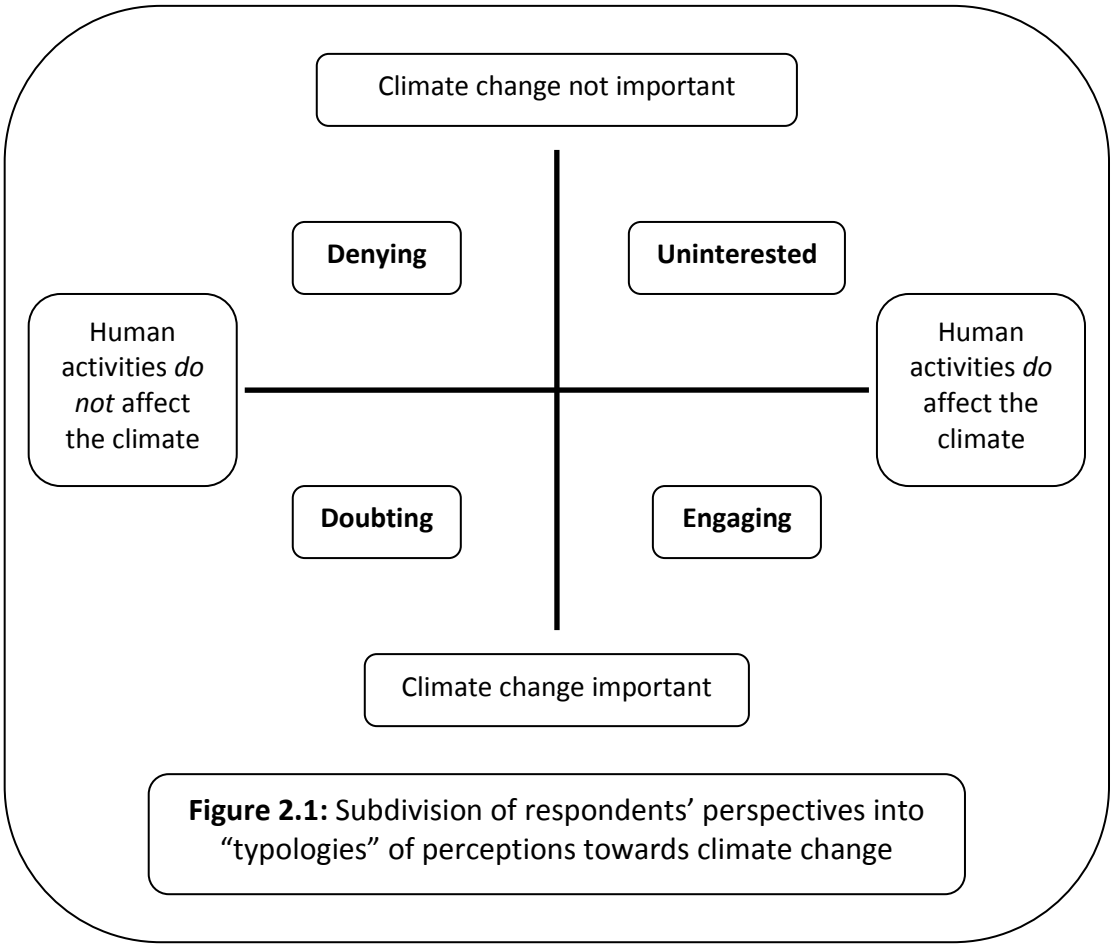


Figure 2.1: Subdivision of respondents’ perspectives into “typologies” of perceptions towards climate change

The four positions in Figure 2.1 are further explored in Box 2.4, with respect to their interest in climate change; influences on the climate; and responsibility and blame for climate change (Lorenzoni and Langford, 2005).

Box 2.4: Characteristics of "engaging", "doubting", "uninterested", and "denying" positions towards climate change (Lorenzoni and Langford, 2005).

Interest in climate change:

For those individuals whose opinions classified as "denying", climate change was not important in their own lives or society in general. These respondents were less likely to consider other environmental issues important personally or to society; noticed changes in the climate; and felt it was important for discussion. Those classified as "uninterested" also thought climate change was not important personally or to society, and attribute importance to other environmental issues. Concern was expressed about aspects of climate change, although concern related to how severely affects one personally. Those classified as "doubting" perceived climate change to be important for them and society, but not could envisage positive or negative effects, and sought a way of introducing changes in their daily lives. Climate change, population growth and environmental issues were important to "engaging" individuals and society; and action should be taken.

Influences on climate:

Those "denying" were more likely to link climate change to natural variability, substantiated by expressions of doubt over human impacts on the climate, and commented that proof of human activities on the climate was essential before they would undertake any behavioural changes. "Uninterested" individuals did not strongly link human activities to climate change, and expressed incredulity over changes in climate unless personally expressed. "Doubting" individuals considered changes in land-use as a cause of climate change, but not natural variability. However, individuals were not certain about the effect of human activities. "Engaging" individuals felt that there was a strong influence on the climate.

Responsibility for (addressing) climate change:

"Denying" individuals felt that national government and the EU had some responsibility, but argued it was "everybody's problem" but politicians have the obligation to make the first move as they have wider scope for action than individuals. "Uninterested" ascribed only some responsibility to industry and none to the UN, and felt that individuals could be trusted to enacted changes. "Doubting" individuals felt that only individuals could be trusted to enact changes to lessen the impacts of climate change, but maintained individuals would act only when directly affected. Whereas, "engaging" individuals felt that organisations; LAs; family/friends; individuals; and oneself had a high responsibility to lessen the impact of climate change. For these individuals, it was very important to alter personal behaviour and imperative to address climate change.

Leiserowitz *et al.* (2008) classified the US population into six climate change audiences ranging from "Alarmed" (19%); "Concerned" (22%); "Cautious" (20%); "Unconcerned" (12%); "Doubtful" (16%); to "Dismissive" (11%); The alarmed,

concerned and cautious were much more exercised about the threat climate change presents to people in other countries than the unconcerned, doubtful and dismissive (Leiserowitz *et al.*, 2008; Rathzel and Uzzell, 2009). All audiences consider the threat of climate change will be much greater for those in other countries, than in their local community (Leiserowitz *et al.*, 2008; Rathzel and Uzzell, 2009). Leiserowitz *et al.* (2008: 20) suggest that "most importantly, they need to understand how critical it is for them to act as citizens – by engaging with elected officials on the issue – in addition to wielding their influence as consumers". Consequently, there is a need for enhanced communication, whether for motivation or in terms of providing examples of what people can do to become part of the solution (Leiserowitz *et al.*, 2008).

2.3.2. Attitudes towards addressing climate change

Despite a tendency to dissociate one's own actions with contributing to climate change, surveys suggest a high level of understanding that behaviours contribute to the problem (Whitmarsh, 2009a; Upham *et al.*, 2009). 75% believe using a car less and flying less would have a 'medium or major' impact on reducing the UK's contribution to climate change (DEFRA, 2007). In the same survey, less than a quarter believe that the UK would be willing to take these actions (DEFRA, 2007). Recycling was the top response when asked what actions could be taken to address climate change (Upham *et al.*, 2009). Energy reduction is not commonly identified as a major feature of addressing climate change, corresponding with low awareness of energy use as the main cause (Whitmarsh, 2009a). There is also little acknowledgement for adaptation to climate change (Whitmarsh, 2009a).

There is widespread support for action to address climate change (Upham *et al.*, 2009). 62% of the Britons agreed that "every possible action" should be taken to address climate change (Poortinga *et al.*, 2006). Consistent with the lack of awareness of their own contribution, the public tends to place responsibility for addressing climate change with international organisations followed by national governments (Norton and Leaman, 2004; Poortinga *et al.*, 2006; Whitmarsh, 2009a; Upham *et al.*, 2009). Over the past two decades, individual responsibility to address climate change has substantially reduced: 16% in 1997 (DETR, 1997) to 8% in 2005

(Poortinga *et al.*, 2006). These findings may reflect a more general tendency to deny personal responsibility for environmental problems and displace blame onto others (Hinchliffe, 1996). Hinds *et al.* (2002) found that over three quarters of the public agree that there is a need to change the way of life of most people to benefit future generations, yet under half feel they should personally change. Consequently, individual responsibility is conditional on clear action by government and other social actions (DEFRA, 2007; Upham *et al.*, 2009).

DEFRA (2007) have segmented the English public into seven groups according to their environmental beliefs and perceived willingness and ability to take pro-environmental actions. These groups differ in their attitudes to climate change (Table 2.3).

Table 2.3: Variations in attitudes towards climate change amongst English public (DEFRA, 2007)

Segment and percentage of population	Knowledge: 'How much do you know about CC?'	Efficacy/Responsibility: 'I don't believe my behaviour and everyday lifestyle contribute to CC'	Risk perception: 'The effects of CC are too far in the future to really worry me'	Political views: 'The government is doing a lot to tackle CC'
'Positive greens' (18%) "I think we need to do some things differently to tackle climate change. I do what I can and I feel bad about the rest"	29% - 'a lot' 0% - 'nothing'	12% agree	2% agree	16% agree
'Waste watchers' (12%) "'Waste not, want not' that's important, you should live life thinking about what you're doing and using"	15% - 'a lot' 3% - 'nothing'	30% agree	17% agree	21% agree
'Concerned consumers' (14%) "I think I do more than a lot of people. Still, going away is important, I'd find that hard to give up… well I wouldn't, so carbon offsetting would make me feel better"	13% - 'a lot' 3% - 'nothing'	17% agree	6% agree	28% agree
'Sideline supporters' (14%) "I think climate change is a big problem for us. I suppose I don't think much about how much water or electricity I use, and I forget to turn things off… I'd like to do a bit more"	11% - 'a lot' 4% - 'nothing'	27% agree	13% agree	25% agree
'Cautious participants' (14%) "I do a couple of things to help the environment. I'd really like to do more… well as long as I saw others were"	16% - 'a lot' 5% - 'nothing'	21% agree	15% agree	23% agree
'Stalled starters' (10%)	15% - 'a lot'	57% agree	68% agree	47% agree

“I don’t know much about climate change. I can’t afford a car so I use public transport… I’d like a car though”	17% - ‘nothing’			
‘Honestly disengaged’ (18%) “Maybe there’ll be an environmental disaster, maybe not. Makes no difference to me, I’m just living my life the way I want to”	10% - ‘a lot’ 16% - ‘nothing’	43% agree	39% agree	20% agree

Table 2.4 demonstrates public attitudes towards (addressing) climate change, and shows acceptance of statements indicating their attitudes towards (addressing) climate change.

Table 2.4: Changes in public attitudes towards (addressing) climate change (DEFRA, 2009).

Statement	Agree 2007	Agree 2009	Disagree 2007	Disagree 2009
"I find it hard to change my habits to be more environmentally friendly"	26%	33%	54%	42%
"It's not worth Britain trying to combat climate change because other countries will just cancel out what we do"	26%	36%	55%	46%
"Because green is an alternative lifestyle it's not for the majority"	26%	30%	51%	30%
"It's not worth me doing things to help the environment if others don't do the same"	22%	28%	65%	56%
"I need more information on what I could do to be more environmentally friendly"	55%	63%	24%	18%
"The Government is doing a lot to tackle climate change"	29%	24%	40%	47%
"I sometimes feel guilty about doing things that harm the environment"	55%	59%	24%	16%
"It would embarrass me if my friends thought my lifestyle was purposefully environmentally friendly"	8%	10%	74%	71%
"If government did more to tackle climate change, I'd do more too"	58%	60%	17%	14%
"The effects of climate change are too far in the future to really worry me"	21%	21%	64%	61%
"Any changes I make to help the environment need to fit in with my lifestyle"	48%	46%	27%	28%
"It's only worth doing environmentally friendly things if they save you money"	22%	20%	61%	61%
"I don't believe my everyday behaviour and lifestyle contribute to climate change"	28%	28%	48%	46%
The environment is a low priority compared with other things in my life"	28%	27%	47%	47%
"I would be prepared to pay more for environmentally friendly products"	46%	44%	31%	29%

Whilst fewer people cite barriers to action, there are challenges to addressing climate change that persist. These challenges relate to concepts such as the "I will if you will" phenomenon (Whitmarsh, 2009b), incorporating addressing climate change within existing lifestyles (Roy and Pal, 2009), and the role habitual behaviours play with acting pro-environmentally (Verplanken, 2011).

There is an acknowledgement by the public that addressing climate change is a moral issue, and that action should address global and national inequalities and consider future generations (Kempton, 1991; Darier and Schule, 1999; Poortinga and Pidgeon, 2003). Upham *et al.* (2009) suggest that the moral framing of climate change and beliefs about whether and how it should be addressed depend on the values and worldviews of participants and their cultures. For example, individuals who perceive the environment as fragile and resources limited are more willing to take (or support) measures to address climate change (O'Connor *et al.*, 1999; Poortinga *et al.*, 2002; Leiserowitz, 2006). These values reflect Milton's (1991) worldviews of nature (Figure 2.2). These environmental worldviews indicate individuals' beliefs about nature: (1) robust, encouraging the exploitation of nature for individual gain; (2) fragile, environmental stability once lost is difficult to regain; (3) robust within limits, promotes caution, predicated on scientific knowledge and imposed through central control; and (4) capricious, prediction and planning of actions are impossible (Milton, 1991).

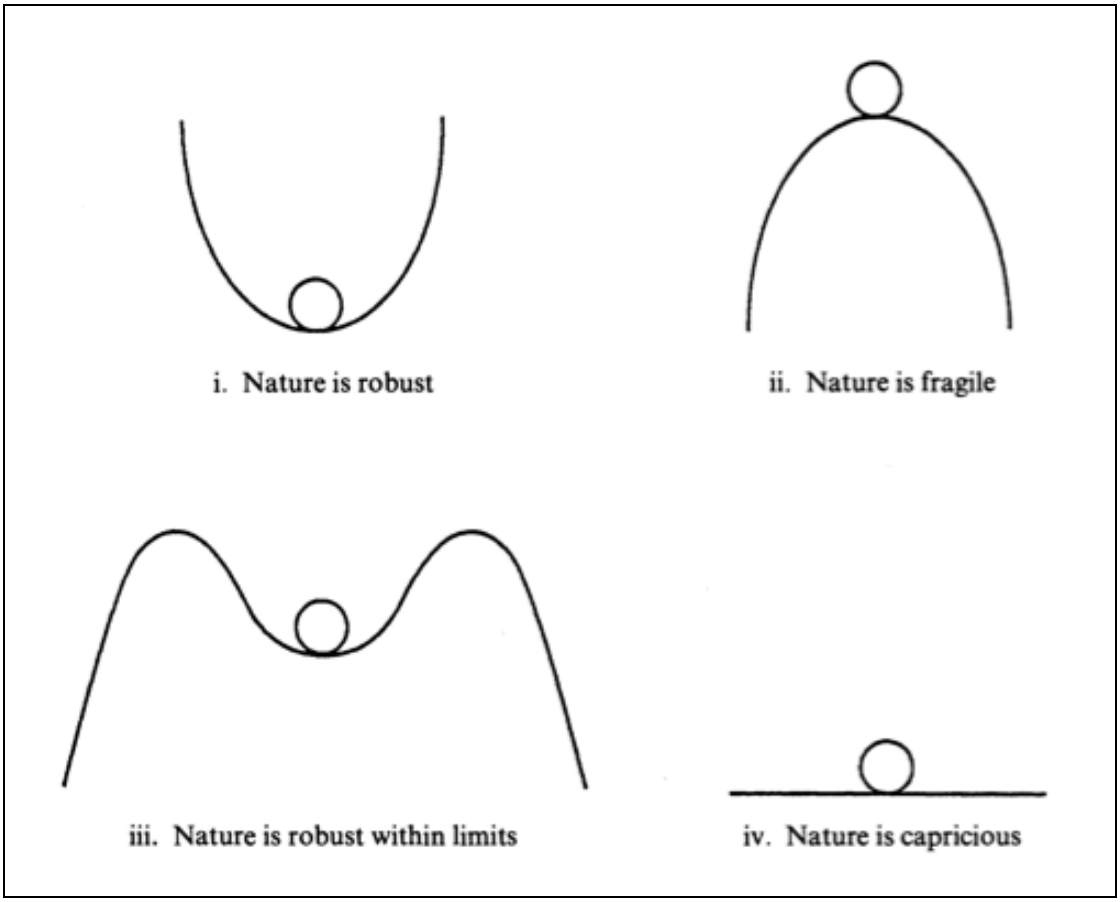


Figure 2.2: The four myths of nature (Milton, 1991).

Despite uncertainty and reluctance to personally reduce energy use, European publics indicate a clear preference for precautionary mitigation measures (Kempton, 1991; Stoll-Kleemann *et al.*, 2001). The UK public (61%) also do not view a trade-off between addressing climate change and economic growth, even in light of the recession, and consider that action can have a positive impact on the European economy (Eurobarometer, 2009). There is widespread support for policies to address climate change that do not involve individuals directly paying (Upham *et al.*, 2009). Incentives and technological solutions receive more support than economic policies, carbon taxes, road tolls or higher energy bills (O'Connor *et al.*, 1999; Bord *et al.*, 2000; DEFRA, 2002; BBC, 2004). Additionally, the public widely support informational approaches, though their impact on behavioural change is limited (Abrahamse *et al.*, 2005; Abrahamse *et al.*, 2007; Maibach *et al.*, 2008; Verplanken, 2011), and have clear preference for increased energy efficiency and the use of renewable energy sources (Hinds *et al.*, 2002; Eurobarometer, 2009).

While theoretical frameworks categorising attitudes towards climate change exist (Lorenzoni and Langford, 2005; Leiserowitz *et al.*, 2008), there are no specific frameworks indicating attitudes towards addressing climate change.

2.3.2.1. Giddens' Paradox and Psychological Distance

Particular variables affect individuals' lack of support for measures and policies aimed at addressing climate change. Long-term changes in the climate are often overshadowed by more immediate issues, often perceived as too distant in the future for individuals and communities to consider dutifully (Lorenzoni and Langford, 2005; Giddens, 2009; Ockwell *et al.*, 2009). Gifford *et al.* (2009) describe this as "temporal pessimism" (environmental quality decreases over time) and "spatial optimism" (environmental quality worsens as geographic distance increases). Giddens (2009) argues that, for many, addressing climate change and reducing carbon emissions is for many a "back of the mind issue", that does not take precedence in the everyday lives of individuals. Referred to as "Giddens' Paradox"; because the dangers of climate change are not tangible, immediate or visible in the course of day-to-day life, many people will take a relaxed approach and not take action until they observe significant effects that have an impact on them (Giddens, 2009). Consequently, a "psychological distance" emerges.

The role of "psychological distance" is an emerging strand of research. It has four dimensions: social, spatial, temporal and certainty of outcome, and corresponds with public concerns about, and responses to climate change (Spence and Pidgeon, 2010; Spence *et al.*, 2012; Devine-Wright, 2013). For example, climate change is seen to impact on other people, who live far away, sometime in the future and with strong uncertainty rather than giving certain impacts on oneself, here and now (Ockwell *et al.*, 2009; Devine-Wright, 2013). Those who consider climate change to be personally relevant refer to concerns for family/future generations and environmental concern, while few mention personal considerations (Whitmarsh, 2009a).

While the public believes that climate change is occurring, they generally perceive the issue a distant threat (Upham *et al.*, 2009). Additionally, public perceptions of positive consequences (i.e. warmer weather, comfort; more outdoor leisure; and growth in tourism) may offset attitudes towards addressing climate change.

2.3.3. Climate Scepticism

Public awareness and reported concern about climate change is widespread. However, while most believe that climate change has anthropogenic causes, a significant majority remain sceptical of the scientific evidence and consensus towards human-induced climate change (Upham *et al*., 2009; Whitmarsh, 2009a; POST, 2010; Whitmarsh, 2011; Corner *et al.*, 2012). Research on public perception of climate change has extensively recognised that people's opinions and views may be based on confusing information and uncertainty, in some cases further heightened by misrepresentation in the media (Bell, 1994; Lacey and Longman, 1994; Lorenzoni and Langford, 2005; Whitmarsh, 2011), and on cultural models and individual values. This is often blamed on undermining environmental education schemes (Kempton, 1997; Lorenzoni and Langford, 2005).

Previous surveys have highlighted that the proportion of "sceptics" (those rejecting any human cause for climate change) could be as high as 17% (Whitmarsh, 2011). Other studies consider the number of sceptics to be around 10% (Lorenzoni *et al.*, 2006). 22% of people are sceptical about claims in the media and feel they need more information to form a clear opinion; this proportion has changed little since 2003 (Whitmarsh, 2009a; Upham *et al.*, 2009). In 2001, 13% of the English public did not believe that humans cause climate change.

Older people are more likely to be sceptical, specifically the over-65s (e.g. 39% disagrees that their behaviour contributes to climate change, compared to 23% of 30-50 year olds) (DEFRA, 2007). Yet, there is also scepticism amongst other age groups: one in ten young people reject the notion of anthropogenic climate change (COI, 2008; Upham *et al.*, 2009). Individuals within the UK are also more sceptical than in most other countries (40% in the UK agree that "the seriousness of climate

change has been exaggerated, compared to 27% across Europe) (Eurobarometer, 2009). Those with high pro-environmental values are less likely to be sceptical, whilst those who hold conservative political values are strongly associated with scepticism (Eurobarometer, 2009; Whitmarsh, 2009a). This scepticism may be a product of media (re)presentation of climate change as controversial and uncertain, and because the causes of climate change are not self-evident (Upham *et al.*, 2009).

2.4. ACTIONS TOWARDS ADDRESSING CLIMATE CHANGE

Individual consumer behaviour is key to the impact society has on the environment (Jackson, 2005; Roy and Pal, 2009), as most behaviours that have ecological consequences are driven by mere repetition and habit rather than conscious deliberation of costs and benefits (Verplanken, 2011; Whitmarsh and O'Neill, 2011). The actions that individuals take and choices they make to consume certain products and services all have direct and indirect impacts on the environment (Jackson, 2005; Roy and Pal, 2009). For these reasons, individual behaviour change is considered to play a significant role to addressing climate change (Jackson, 2005; Heimlich and Ardoin, 2008; DECC, 2009; POST, 2010).

Understanding (the lack of) behavioural responses to (addressing) climate change requires the perspective of behavioural impact *and* of the actors, and their intentions: referred to as impact-oriented and intent-oriented behaviour (Stern, 2000; Whitmarsh, 2009b). Impact-oriented actions are concerned with the actual impacts of behaviour on environmental issues, whereas intent-oriented action examines behaviour from the point of view of the motivation of the actor in respect to environmental issues. These categories can, and do, overlap, however previous research has primarily addressed climate change action from the perspective of impact rather than intent (Poortinga and Pidgeon, 2003; Norton and Leaman, 2004; Whitmarsh, 2009b). Consequently, focusing on these actions defined by experts as having the greatest impact on climate change, rather than on actions non-expert members of the public may conduct with the intention of addressing climate change (Whitmarsh, 2009b). Box 2.5 examines the salience of intent-oriented and impact-oriented actions and research.

Box 2.5: The salience of intention and impact (Whitmarsh, 2009b)

The distinction between intention and impact is salient for three reasons:

1. It exposes whether, and why, people are investing their energies in "futile activities" that they mistakenly believe will address climate change (Read *et al.*, 1994). Whitmarsh (2009b) reports that the UK public may indeed be engaged in less-than-effective activities to address climate change. This may suggest that surveys measuring energy reduction as an indicator of responses to addressing climate change provide an incomplete picture of public actions. Where there is divergence between intention and impact, the reasons for this disparity need to be explored to channel efforts appropriately and remove barriers to low-carbon, sustainable lifestyles (Whitmarsh, 2009b).
2. It allows for analysis of the various motivations or goals that may underlie decisions about energy use. Often environmentally beneficial actions result from non-environmental concerns such as a desire to save money (Stern, 2000; Whitmarsh, 2009b). This, again, provides policy makers with valuable information about how to encourage and enable energy conservation (Whitmarsh, 2009b).
3. Applying an appropriate theoretical framework depends on the aims and measures applied within behavioural research (Whitmarsh, 2009b). Research into intent suggests that there is a moral basis for pro-environmental actions (Gatersleben *et al.*, 2002), whereas recycling tends to be predicated by environmental concern, before material incentives or supporting facilities are introduced (Schultz *et al.*, 1995). As described in the Value-Belief-Norm (VBN) theory (Stern, 2000), altruistic or self-transcendent values tend to activate personal norms to take pro-environmental action, if it is believed the environmental conditions threaten the things the individual values can act to reduce the threat (Snelgar, 2006; Whitmarsh, 2009b). Impact demonstrates the complex behavioural ecologies and multiple motivations of energy use, as well as the range of internal and external barriers that constrain the value-action relationship (Kollmus and Agyeman, 2002). Stern (2000) summarises the salient influences on environmentally-significant behaviour:
   - Attitudes, values and beliefs: relating to environment, but also to other considerations including comfort, aesthetics, time spent with family etc;
   - Contextual forces: including social, economic, institutional and political factors;
   - Personal capabilities: knowledge, skills and resources; and
   - Habit.

In the content of energy use, habit and economic influences appear to be particularly salient (Verplanken *et al.*, 1998; Poortinga *et al.*, 2004; Whitmarsh, 2009b). Previous studies indicate that self-reported motivations for energy conservation tend to be unconnected to climate change (Poortinga and Pidgeon, 2003; Norton and Leaman,

2004). Of the 40% of English individuals who claim to "regularly cut down the amount of gas/electricity your household uses", 81% do so to save money while only 15% do so to "help the environment/reduce pollution". Similarly, of the 39% claiming to "cut down car use for short journeys", 59% do so for exercise or to save money (25%), and only 17% for environmental reasons. Brandon and Lewis (1999) indicate that financial motivations commonly underpin energy conservation actions.

2.4.1. (Willingness to take) Behavioural responses towards addressing climate change

Individuals in the UK report that they are attempting to reduce their environmental impact however, these actions performed to address climate change are rarely those with the greatest impact on reducing carbon emissions (Whitmarsh, 2009b; POST, 2010). Understanding and addressing this problem is a fundamental challenge for future climate policy (POST, 2010).

Currently 91% of respondents recycle; 76% are reducing their consumption of gas and electricity at home; 62% of drivers have switched to walking or cycling for short, regular journeys although 18% rejected this idea; 26% of drivers have switched to public transport for regular journeys but 47% rejected this idea; and 23% are taking fewer flights however, of those that have flown in the last 12 months, 36% have considered taking fewer flights but have rejected the idea (Whitmarsh, 2009b). It should be noted that results recorded by Whitmarsh (2009b) is based on self-reporting behaviour, which may not accurately reflect the actual behaviour of all respondents (POST, 2010). This is a frequently highlighted criticism of quantitative measures.

With respect to specific actions, there are some measures that people are more willing to undertake than others (Whitmarsh, 2009b; Peters *et al.*, 2010). Peters *et al.* (2010) identified that a substantial majority of respondents in Islington claimed to have already adopted a range of pro-environmental behaviours (Figure 2.3) with the intention of continuing them in the future.

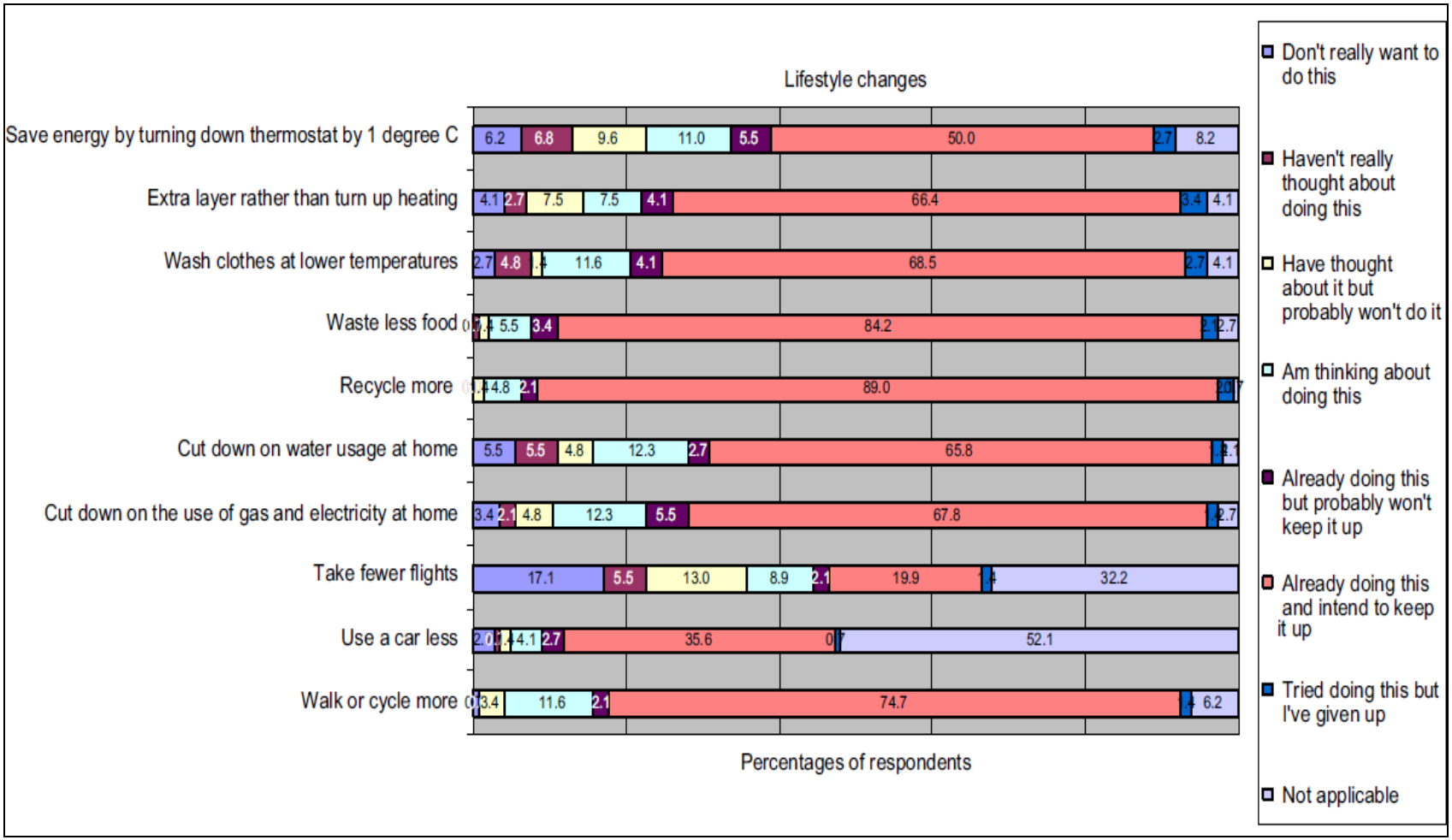


Figure 2.3: Islington resident responses to potential changes in lifestyles accommodating pro-environmental behaviours (Peters *et al.*, 2010).

Residents in Islington claim to already have adopted a range of pro-environmental actions with the intention of continuing them in the future (Peters *et al.*, 2010). Specifically, residents indicating that they "already do this and intend to keep it up" relate to actions such as recycling (89%); wasting less food (84%); walking and cycling more (75%); cutting down gas and electricity usage (68%); reducing temperature of washed clothes (69%); and cutting down water use (66%).

The two lifestyle changes identified by Peters *et al.* (2010) which received considerable negative responses indicating "do not really want to do this" and "have not really thought about doing this" concern taking fewer flights and using a car less (Peters *et al.*, 2010). Given the predominance of affirmative responses for cutting down energy use at home, turning down the thermostat did not receive as many positive responses illustrating the approach to cutting down domestic energy consumption is achieved through alternative techniques (i.e. through single actions) (Schweizer-Ries, 2008; Peters *et al.*, 2010).

While public support for mitigating climate change is high, willingness to change personal behaviour and lifestyles is limited by a multitude of perceived individual, social and structural barriers (Section 2.5.4) (Ockwell *et al.*, 2009; Upham *et al.*, 2009; Whitmarsh, 2009b; Burch, 2010).

2.4.2. Measures taken to address climate change

Domestic activities contribute substantially to the UK's emission profile. Around 42% of carbon emissions produced in the UK result directly from actions taken by individuals (POST, 2010). However, if all emissions arising from UK consumption are considered, individuals are directly responsible for around 76% of emissions (POST, 2010). Consequently, technological and individual behavioural responses are considered to play a significant role in addressing climate change (Jackson, 2005; Heimlich and Ardoin, 2008; DECC, 2009; Axon, 2010; POST, 2010).

The actions individuals undertake are identified as technical and/or behavioural measures (Abrahamse *et al.*, 2005; Reeves, 2009). It is recognised that these categories do often overlap, for example the success of technical measures is often reliant on successful householder engagement and some behavioural measures involve the installation of physical equipment (such as smart meters) (Reeves, 2009).

2.4.2.1. Technological responses

Technical measures available to addressing climate change range from low to medium costs measures (i.e. draught proofing and cavity wall insulation) and more disruptive and high cost measures (i.e. solid wall insulation or micro-generation of renewable energy) that have lower take-up levels (Reeves, 2009). Reeves (2009) lists a range of technical measures (Box 2.6).

Box 2.6: Technical measures that address climate change.

Reeves (2009) highlights that there are a range of technical measures that can be employed to address climate change, such as:

- Cavity wall insulation;
- Loft insulation;
- Boiler replacement with efficient gas boilers;
- Double (or triple) glazed windows;
- Improved heating controls;
- Eco-friendly vehicles;
- Draught-proofing;
- Installing energy efficient lighting;
- Micro-generation of renewable energy.

The measures in Box 2.6 are largely seen as cost-effective, but often demand immediate and substantial costs that impact upon the uptake of such measures (Reeves, 2009). Additionally, installation of technical measures and energy efficient equipment can range from the improved uptake of existing low-carbon technologies (i.e. replacement of old boilers and installation of efficient lighting) to the deployment of new technology (i.e. domestic micro-power) (Kelly, 2006).

2.4.2.2. Behavioural responses

Individuals and households can undertake a multitude of behavioural responses. Such responses can be single actions or completed repeatedly (Schweizer-Ries, 2008). An example of the range of behavioural responses that individuals, and communities, can employ to address climate change are listed in Box 2.7.

Box 2.7: Behavioural measures that address climate change.

Whitmarsh (2009b) and Warren and McFadyen (2010) highlight that there are a range of behavioural measures that can be employed to address climate change, such as:

- Wearing an extra layer of clothing instead of turning up heating;
- Turning the thermostat down by 1 degree;
- Buying energy efficient light bulbs;
- Recycle more;
- Waste less food;
- Wash clothes at lower temperatures;
- Cut down on water usage at home;
- Cut down on gas and electricity usage at home;
- Walk or cycle more;
- Eat less meat;
- Use a car less;
- Take fewer flights.

Behavioural responses of energy consumption and carbon reduction can be divided into two sectors with regard to timescale: single actions (i.e. buying energy-saving devices or moving into a low-carbon house) and permanent actions (that are behavioural patterns, i.e. switching off an electrical device completely instead of using the stand-by function). A third behavioural aspect can also be observed: flexible actions; indicating energy shifting, using devices when sufficient energy is available and saving energy when energy becomes short (Schweizer-Ries, 2008). Load shifting (i.e. shifting the time of energy consumption, ideally to the time it is produced such as using a washing machine powered by solar power when the sun is shining) can also be identified as an example of flexible actions (Schweizer-Ries, 2008).

2.4.3. Relationships between attitudes and actions

People's awareness and perceived importance of environmental issues do not always translate into actions to change behaviour (Jackson, 2005; Darnton, 2008). Individuals constantly mediate between inner demands, shaped by beliefs and previous experience, and external signals related to social and cultural norms that invariably mould social expectations, behaviour and lifestyle (Stoll-Kleeman *et al.*, 2001). Some processes can contribute to reconciling an individual's inner demands with external signals, thus establishing a sense of harmony or consistency within the individual (Lorenzoni and Langford, 2005). A lack of agreement or consistency gives rise to cognitive dissonance (Festinger, 1957).

People experiencing dissonance deal with it by resolving it, denying it or displacing it. Individuals may establish "barriers of denial" to make sense of the dissonance such as may arise between the necessity of acting to mitigate climate change and their personal preference for a particular action (Lorenzoni and Langford, 2005). Stoll-Kleeman *et al.* (2001) explored the results of cognitive dissonance during focus groups. Denial was reinforced by unwillingness to give up preferred lifestyles, believing that personal costs would outweigh the benefits to others; faith in technology to solve climate change; and distrust in governance to deliver climate change commitments (Stoll-Kleeman *et al.*, 2001).

Attitudes are not the only determinant that can affect environmental behaviour, as there are additional determinants of behaviour (Jackson, 2005; Crisp and Turner, 2007). The impacts of attitudes towards addressing climate change need to be considered in conjunction with other variables to fully understand the reasons why individuals behave in certain ways. At the individual level: attitudes, values, beliefs and social context are critical determinants of behaviour, and thus may either facilitate or inhibit climate change responses (Stern, 2000; Kollmuss and Agyeman, 2002; Jackson, 2005; Burch, 2010).

Changing behaviours to become more sustainable is far from straightforward as individual behaviours are deeply embedded within social contexts (Jackson, 2005;

Heimlich and Ardoin, 2008). Therefore, an understanding of behaviour is required (Section 2.4.4). Individuals are guided as much by what others around them say and do as they are by personal choice (Azjen, 1991). Current actions are 'locked in' to unsustainable consumption patterns which occur in part through the architecture of incentive structures, institutional barriers, inequalities of access and restricted choice (Jackson, 2005; Ockwell *et al.*, 2009).

2.4.4. Understanding actions: A review of behavioural frameworks

Various specific social-psychological theoretical frameworks are used to focus on understanding pro-environmental behaviours in relation to environmental attitudes, alongside situational and local contexts (Bonnes and Bonaiuto, 2002; Hogg and Vaughan, 2008). Conceptual models such as the TPB (Azjen, 1991) and the Conceptualisation of Environmental Behaviour (Barr *et al.*, 2003) illustrate the social, psychological and contextual antecedents of behaviour and the drivers of behavioural change (Jackson, 2005; Heimlich and Ardoin, 2008). Most actions are repetitive and habitual, however prevalent models of behaviour, such as the TPB, do not well accommodate this aspect (Jackson, 2005; Verplanken, 2011; Whitmarsh and O'Neill, 2011).

Verplanken (2011) suggests that common sense would dictate that the balance of perceived costs and benefits guides our behaviours; that is, overall value. Whereas economists interpret 'value' in monetary terms, here the concept of 'utility' or 'subjective expected utility' designates the expectation of the perceived value of a behavioural outcome (Verplanken, 2011). This principle underpins prevalent models of behaviour, such as the TRA (Ajzen and Fishbein, 1980) and TPB (Figure 2.4) (Ajzen, 1991).

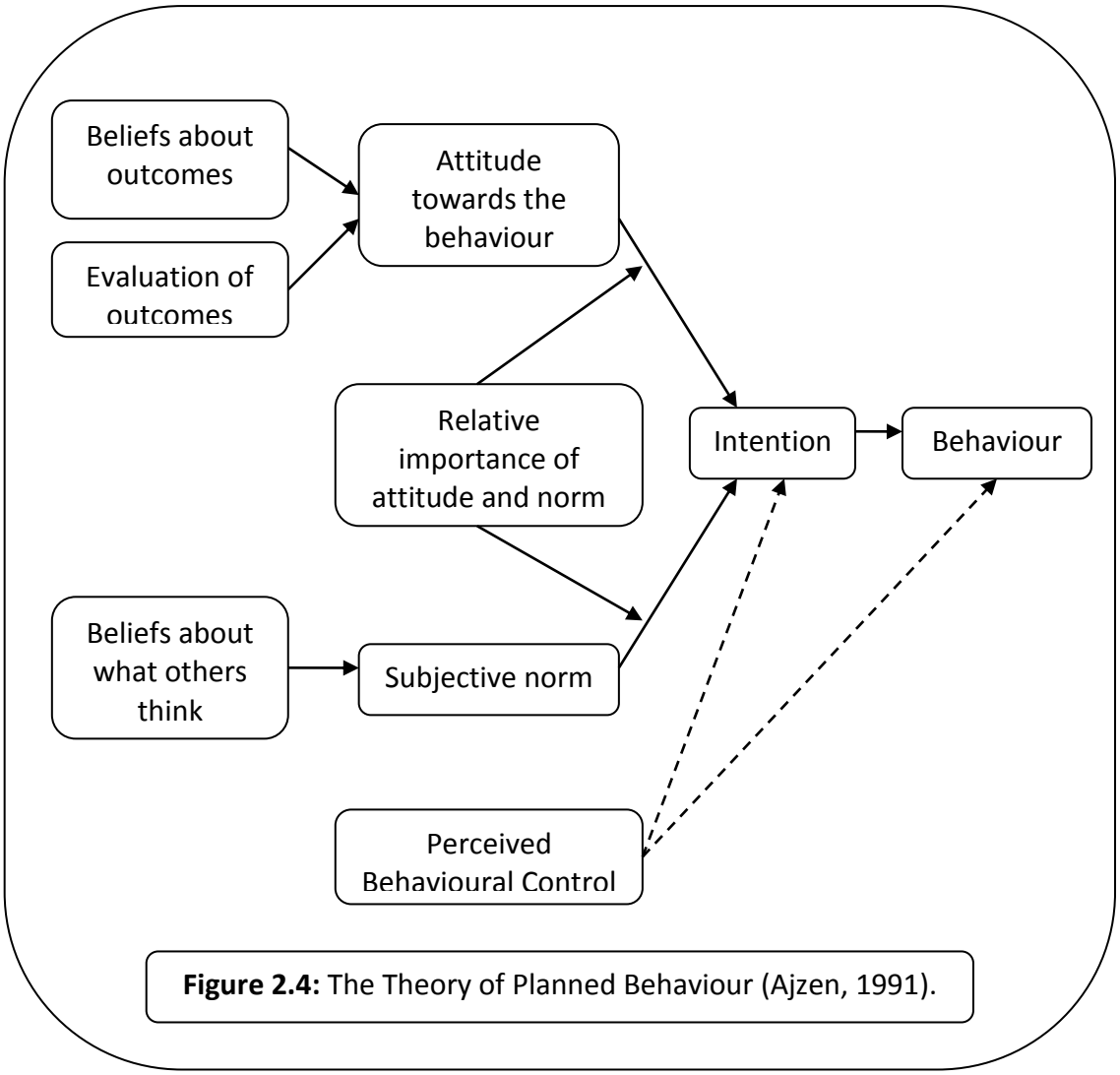


Figure 2.4: The Theory of Planned Behaviour (Ajzen, 1991).

According to these models, specific perceptions of expected costs and benefits associated with a behavioural choice (e.g. price, comfort, usefulness) lead to the formation of an attitude (Jackson, 2005; Darnton, 2008; Verplanken, 2011). Theories such as the TRA and TPB suggest that attitudes guide behaviour through the operation of behavioural intentions (Ajzen, 1991; Verplanken, 2011). The attitudinal component based on an Expectancy Value calculation is a common factor in many social-psychological models of behaviour (Darnton, 2008; Moloney *et al.*, 2010; Verplanken, 2011). Intentions are also determined by the felt pressure from the social environment, such as expectations of family or friends, represented as a social norm (Verplanken, 2011). As a third determinant of intentions, the TPB suggests that perceptions of control over behaviour is assumed to determine intentions or, if the

perception of control reflects actual control, behaviour directly (Madden *et al.*, 1992; Verplanken, 2011). Table 2.5 discusses the components outlined in Figure 2.4.

Table 2.5: Components of the Theory of Reasoned Action (Hogg and Vaughan, 2008).

Component	**Characteristics of Component**
Attitude towards the behaviour	A product of the individual's beliefs about the target behaviour and of how these beliefs are evaluated. It is important to note that this is an attitude towards the behaviour (such as installing insulation) not towards the object (such as the insulation material itself).
Subjective norms	The TPB acknowledges the social influence on personal behaviour which is incorporated into the model in the form of a subjective norm. However, Jackson (2005) argues that the TPB does not make a distinction between subjective norms and personal norms relating to an individual's personal belief about the morality of the given behaviour. Subjective norms are a product of what the individual perceives to be others beliefs. Significant others provide a guide about what is the proper thing to do.
Perceived behavioural control	Perceived behavioural control is defined as the extent to which the person believes it is easy or difficult to perform an act. The process of coming to such a decision includes consideration of past experiences as well as present obstacles that the person may envisage. Ajzen (1991) argues that the degree of success in carrying out the behavioural intention depends on the strength of our belief in our ability to carry out that behaviour. For example, someone who is more confident they can master a particular action is more likely to succeed than someone who doubts their ability to carry it through. Provided that the individual's perceptions of control are not misguided, perceived behavioural control can be taken as an indicator of actual behavioural control, and if the individual truly does have volitional control over their actions then intention is likely to correlate closely with behaviour.
Behavioural intention	An internal declaration to act. The TPB bridges the gap between attitudes, subjective norms, perceived behavioural control and behavioural outcomes by inserting the construct of intentions, which directly lead to behaviour (Darnton, 2008). Behavioural intention represents the motivation of the individual to engage in a particular behaviour.
Behaviour	The action performed. The TPB states that the action will be performed if the person's attitude and social norms are both favourable.

The prediction of intentions by attitudes, social norms and perceived behavioural control has received firm empirical support (Armitage and Connor, 2001). However, Verplanken (2011) states that some important caveats should be noted. Firstly, behaviour is assumed to be caused by intention, while intentions are considered to be caused by a combined influence of attitudes, subjective norms and perceived behavioural control. Secondly, the model suggests that all influences on behaviour, whether internal (i.e. personality) or external (i.e. external information), are routed from left to right in the model. This suggests that information may be provided that either changes the balance of perceived costs and benefits (the attitude route); beliefs about norms (the normative route); or ways to overcome particular barriers to behaviour (the perceived control route). On the other hand, evidence suggests that behaviour may be influenced by factors not considered by the model or mediated by the model variables, such as impulsive or non-conscious processes.

Other models of pro-environmental behaviour are extensions of the TPB, such as the addition of personal norms (Harland *et al.*, 1999); self-identity (Terry *et al.*, 1999); or extend the norm-activation theory of altruistic theory (Schwartz, 1977). The norm-activation theory asserts that altruistic actions are driven by personal norms (a sense of personal obligation), which are associated with fundamental values, and proposes a casual chain of variables that leads to pro-environmental variables (Verplanken, 2011). The chain starts with relatively stable altruistic personal values and beliefs about the relation between humans and the environment, and is activated when individuals are confronted with environmental conditions that violate them (Schwartz, 1977; Verplanken, 2011). This activates beliefs that valued objects are threatened, beliefs about the individual's ability to act and the felt responsibility to act, which may then lead to a choice of pro-environmental actions (Schwartz, 1977; Verplanken, 2011).

A range of models predicated on the norm-activation theory have recently been integrated into the value-belief-norm (VBN) theory of environmentalism (Figure 2.5) (Stern, 2000).

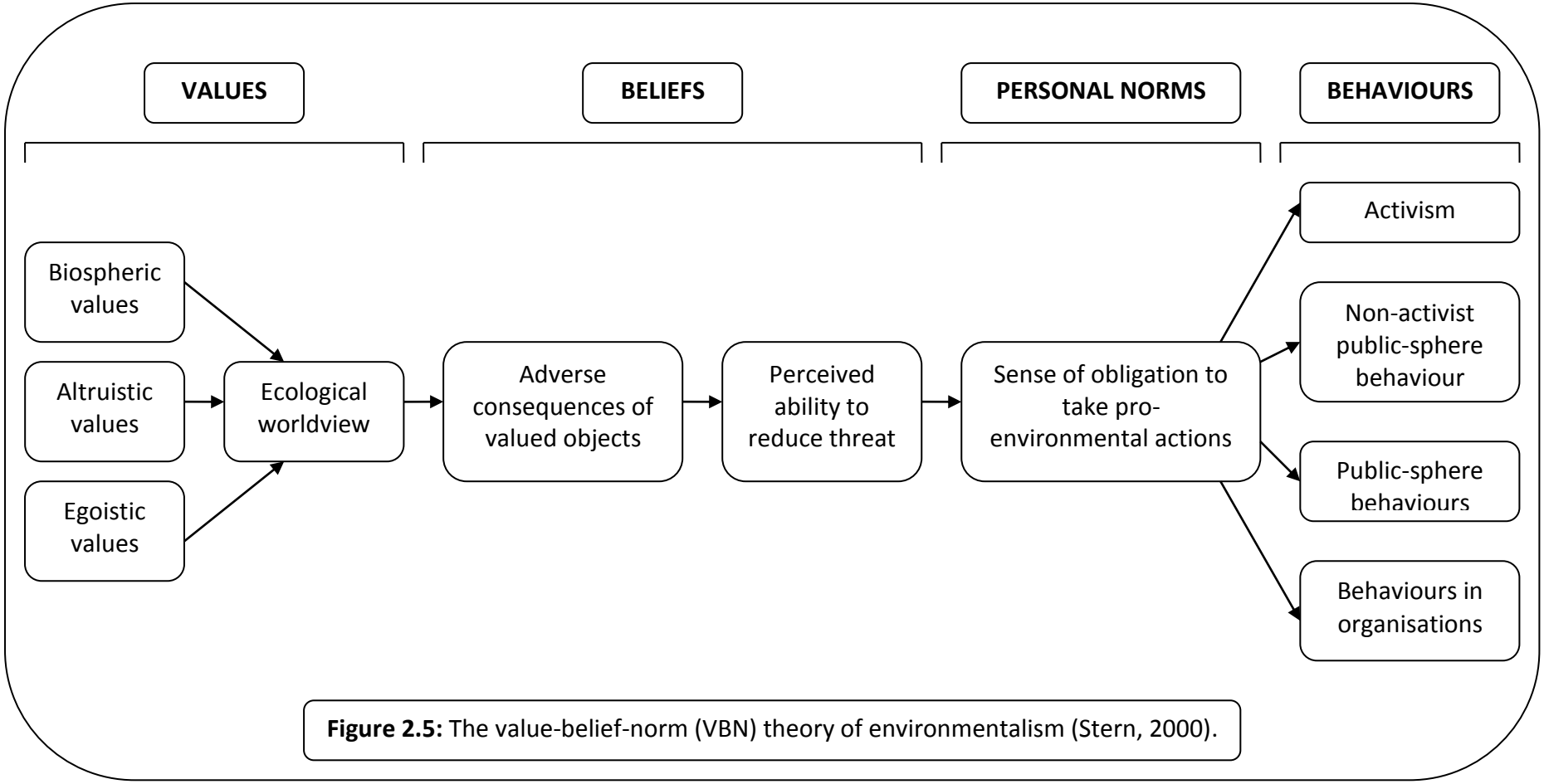


Figure 2.5: The value-belief-norm (VBN) theory of environmentalism (Stern, 2000).

The VBN stipulates the importance of altruistic personal values and an ecologically friendly worldview for pro-environmental behaviour (Stern, 2000; Verplanken, 2011). The VBN is a useful framework as it suggests ways to promote pro-environmental behaviours amongst segments of the population who hold pro-environmental values, but do not translate these into action, and highlights the difficulty of changing ecologically unfriendly behaviour (Verplanken, 2011). Values do not easily translate into action, and are only enacted if they are central to an individual's self-concept and are cognitively activated (Verplanken and Holland, 2002; Verplanken, 2011).

Pro-environmental values per se do not necessarily lead to pro-environmental actions even when the opportunity to act in an environmentally friendly way arises, and drawing people's attention to pro-environmental issues leads to action only if pro-environmental values are part of a person's self-identity (i.e. their sense of who they are) (Verplanken and Holland, 2002; Verplanken, 2011). The VBN model therefore seems to apply to those who prioritise pro-environmental values and to actions that are clearly earmarked as serving pro-environmental goals (Verplanken, 2011). Pro-environmental values may drive energy conservation behaviour (Black *et al.*, 1985) but often low-carbon choices are motivated by non-environmental considerations such as money, convenience and health benefits (Brandon and Lewis, 1999; Whitmarsh, 2009b).

Consequently, energy conservation actions and use are typically a product of a complex ecology of motivations and external influences, resulting in little consistency in apparently 'low-carbon' behaviours across multiple contexts such as home, work, travel and leisure (Darnton, 2008; Verplanken, 2011). Therefore, the models reviewed above do not do justice to the dynamic nature of behaviour, and do not incorporate the notion that most actions are repeated and habitual (Verplanken, 2011; Whitmarsh and O'Neill, 2011). Habits are repeated behaviours that have become automatic responses in recurrent and stable contexts, and have three key features (Box 2.8) (Verplanken *et al.*, 1998).

Box 2.8: Key features of habits (Verplanken, 2011).

Verplanken (2011) notes that habits have three key features:

1. Repetition: Habits form by successfully repeating behaviour. 'Successfully' should be interpreted in a wide sense, and not confined to what objective observers define as desirable. Habits may be successful from a personal perspective because it provides comfort or status, but maybe unhealthy, asocial or environmentally unfriendly from an outsider's perspective (Verplanken, 2011). Repeated behaviour is not necessarily habitual, for example decisions that have pervasive consequences do not turn into habits.
2. Automaticity: 'Automaticity' can be broken down into features such as absences of conscious intent; lack of awareness; the difficulty of control; and the fact that habitual behaviour does not tax cognitive resources (Bargh, 1994; Verplanken and Aarts, 1999; Verplanken, 2011).
3. Execution: Habits are executed in stable contexts, and are more or less done at the same time and at the same location (Wood *et al.*, 2002). Verplanken (2011) states that an important caveat here is that habitual behaviours are under the control of the environment where the acts take place, to a large extent. For example, one executes a habit not because of a conscious intention or willpower, but because it is 8am or because one passes by a particular shop. It is these cues that appear to regulate behaviour, rather than our attitudes or intentions (Verplanken, 2011).

The mechanisms in Box 2.8 indicate that habits do not follow the processes applied in theories such as the TPB or VBN. Ouellette and Wood (1998) indicate that behaviour correlated less strongly with intentions when it was frequently performed. Additionally, intentions were less or not at all predictive of behaviour when strong habits had been formed (Verplanken *et al.*, 1998). Other studies suggest that habits lead to 'tunnel vision' whereby habitual judgements and choices are based on little information and simple choice rules (Aarts *et al.*, 1997; Verplanken *et al.*, 1997; Verplanken, 2011). While models such as the TPB and VBN are useful and valid in many contexts, habits form boundary conditions to their validity (Verplanken, 2011).

2.5. CHANGING ATTITUDES AND ACTIONS TOWARDS ADDRESSING CLIMATE CHANGE: TRANSITIONS TOWARDS SUSTAINABLE LIFESTYLES

2.5.1. Barriers to addressing climate change and sustainable living

Currently, action is only taken by a minority and often not for environmental reasons, whilst others are unwilling to take action due to difficulty or financial implications associated with sustainable, low-carbon lifestyles (Whitmarsh, 2009b; Ockwell *et al.*, 2009). There are concerns that taking action to address climate change is a waste of time when the majority of people are doing nothing (known as the 'free-rider effect') (Ockwell *et al.*, 2009). Often, individuals blame businesses and other countries for the causes of climate change and look to government to take responsibility for tackling it, make green living easier and more attractive for the public (Lorenzoni *et al.*, 2007; Ockwell *et al.*, 2009).

Barriers towards engaging with climate change exist at two interrelated levels: individual and social. These include lack of knowledge; distrust of information; feeling disempowered; other priorities and values; perceived inaction by others; social norms (to consume); and institutional impediments (Lorenzoni *et al.*, 2007; Ockwell *et al.*, 2009; Burch, 2010). Some of these barriers such as lack of knowledge can be removed relatively easily through information provision, whereas social and structural barriers imply a need for profound and costly social change (Ockwell *et al.*, 2009).

Consequently, these factors equate to substantial barriers towards engaging the public with addressing climate change. Whilst there is a need for changes in public attitudinal and behavioural responses, alterations to political and economic contexts (Jackson, 2011) and infrastructural, structural and social systems and contexts (Lorenzoni *et al.*, 2007) are also required to address climate change and create a low-carbon, sustainable economy, society and future.

2.5.2. The need for attitudinal and behavioural changes towards addressing climate change

Surveys indicate that only a minority of the public take measures to reduce their energy consumption, and around one third of the public are making an effort to drive and/or fly less (Ockwell *et al.*, 2009). However, when asked what actions they would be willing to take to address climate change; recycling and home energy conservation are the most frequently mentioned, while there is considerable resistance to changing travel habits (Ockwell *et al.*, 2009). Despite widespread concern about climate change (Whitmarsh, 2009a), energy polices, incentives and technological solutions receive more support from the public than taxes or higher energy bills (O'Connor *et al.*, 1999; Ockwell *et al.*, 2009).

Surveys demonstrating low levels of behaviour change also demonstrate high levels of understanding as to which behaviours contribute most to human-induced climate change (Ockwell *et al.*, 2009). The disparity between public awareness about climate change and the limited behavioural response is consistent with the widely reported "value-action" or "attitude-behaviour" gap (Blake, 1999; Kollmuss and Agyeman, 2002), suggesting that people do not act in accordance with what they know or feel. The "attitude-behaviour" gap illustrates the complex interactions between psychological, social and environmental factors in the production of behaviour (Stern, 2000; Jackson, 2005; Ockwell *et al.*, 2009). Behaviour is not always preceded by conscious deliberation, particularly as climate change is a complex, uncertain, global and long-term issue, which is difficult to understand and relate to at the individual level (Ockwell *et al.*, 2009).

Yet, sustainability demands changes in human behaviour. Attitudinal and behavioural change is fast becoming the "holy grail" of climate change and sustainable development policy (Jackson, 2005). Behavioural change is difficult to achieve, therefore understanding how, why and where behaviours change is an important pre-requisite for making progress. AIDA campaigns have been widely utilised for achieving public awareness and interest (Barr and Gilg, 2005) however, observing how others behave and modelling our behaviour on others provide more

effective and more promising avenues for behavioural change (Jackson, 2005; Peters *et al.*, 2010). There are numerous factors related to the difficulty of influencing behavioural change such as personal motivation; collective practice; peer pressure; habits; subjective norms; and social contexts (Jackson, 2005; Verplanken, 2011).

2.5.3. Approaches to attitudinal and behavioural change

Interventions to change everyday behaviours often attempt to change people's beliefs and intentions (Whitmarsh and O'Neill, 2011). These interventions are unlikely to be an effective means to change behaviours that have become established habits (Verplanken, 2011; Whitmarsh and O'Neill, 2011). Successful habit changing interventions involve disrupting the contextual factors that automatically cue habit performance. Old carbon-intensive habits can be broken and new low-carbon habits embedded through providing informational inputs at points when habits are naturally vulnerable to changes in their lifestyle or environment (e.g. moving house, having a baby or changing jobs) (Heimlich and Ardoin, 2008; Verplanken, 2011; Whitmarsh and O'Neill, 2011). Consequently, Verplanken (2011) argues that the formation of sustainable attitudes and actions should be embedded through forming green habits utilising targeted behaviour change interventions.

DEFRA uses a 4-part model to represent the process of lasting behaviour change: Engage (get individuals involved through communication campaigns); Encourage (give the right signals i.e. through the tax system); Enable (make pro-environmental behaviour by providing services and facilities); and Exemplify (by showing consistency in policies) (Darnton, 2008; POST, 2010). This model illustrates a whole systems approach and highlights the importance of addressing individual-scale, social and structural barriers to behavioural change (Lorenzoni *et al.*, 2007; POST, 2010).

Considerations of finance and money are often used as motivators for pro-environmental behaviour (Whitmarsh, 2009a). Considering positive environmental benefits of one green behaviour can make individuals more likely to undertake other pro-environmental actions, and more frequently, than those who considered the

economic benefits (Evans *et al.*, 2013; Thogersen, 2013). This "spillover effect" is only likely to occur if the information used to stimulate people evokes environmental reasons, instead of self-interest (Evans *et al.*, 2013; Thogersen, 2013). Thinking of environmental benefits of a singular action can spill over into other behaviours, thus promoting a broader range of changes towards a sustainable lifestyle (Evans *et al.*, 2013; Thogersen, 2013).

While the need to take responsibility for personal actions is a common key message in addressing climate change, there is little agreement about the most effective strategies for achieving a transition to sustainable living (Moloney *et al.*, 2010). DEFRA adopts a social marketing approach with methods derived from business management targeting specific behaviours, immediate barriers and interventions to overcome these barriers (DEFRA, 2008c; Moloney *et al.*, 2010). A second approach by the WWF challenges the widely adopted social marketing approach to behaviour change arguing that it does not go far enough in addressing the fundamental shifts required in policy and lifestyles necessary to respond to climate change (WWF, 2008; Moloney *et al.*, 2010). This approach rejects appeals to individualism, the personal benefits and social status resulting from adopting particular pro-environmental behaviours. Instead, it focuses on the motivations and values that are intrinsic to people i.e. personal growth and community involvement which is argued to be more likely to lead to pro-environmental behaviour (WWF, 2008; Moloney *et al.*, 2010). A third approach extends the rejection of individualism and the behaviouristic approaches of micro-sociological approaches and advocates a "socio-technical context" of human behaviour and the resultant need for changes in structural and institutional environments, which would normalise pro-environmental behaviours through systems of incentives and convenience (Moloney *et al.*, 2010). Irrespective of the preferred approach to behaviour change, few are working effectively, or on a widespread a front necessary to significantly address climate change (Haxeltine and Seyfang, 2009; Moloney *et al.*, 2010).

While the above approaches disagree upon the most effective strategy for behavioural change, reference is made to notions of community involvement; multi-

agency responses; normalising pro-environmental behaviours; and a rejection of individualistic approaches. These techniques are frequently used within CBCRS (Section 3.5), and suggest that responses towards addressing climate change at the community level may be sufficient to facilitate, increase and maintain a transition towards sustainable living.

Reviews of behaviour change theories and strategies reveal a wide range of theories and assumptions (Jackson, 2005; Darnton, 2008; Heimlich and Ardoin, 2008; Hargreaves, 2011; Verplanken, 2011). Such theories differ according to the variables focused on: internal (micro-sociological) or external (macro-sociological). Internal variables focus on the influences on what goes on inside a person's mind such as awareness, knowledge, attitudes, rational thought processes, entrenched habits and behaviours (Jackson, 2005; Moloney *et al.*, 2010). These variables differ between individuals as a function of life stage and context. External variables are located in the physical, social and discursive environments in which a person lives (Moloney *et al.*, 2010). While there is no universally accepted theory of behaviour change, it is possible to identify a range of variables, which can impact on behaviour, depending on the context (Moloney *et al.*, 2010).

There is a preoccupation with individual motivations, values, beliefs and ways of influencing them in many behaviour change programmes, predicated on the assumption that the right information will lead to environmental behaviour. However, information can be an important first step in prompting behaviour change, information alone is unlikely to motivate change (Barr and Gilg, 2005; Darnton, 2008; Moloney *et al.*, 2010). Information is also unlikely to result in sustained behavioural change beyond the life of a given campaign, since enthusiasm for 'new' actions wanes and participation decays in the absence of continual reinforcement (Moloney *et al.*, 2010).

There is an assumption that if people are presented with facts relating to how their behaviour is affecting the environment, they will respond rationally and change to sustainable practices, however responses to such information could lead to

disinterest, disempowerment, fear and scepticism (O'Neill and Nicholson-Cole, 2009; Moloney *et al.*, 2010; Whitmarsh, 2011). Highlighting impending tragedy on a global scale can have paralysing rather than empowering effects (O'Neill and Nicholson-Cole, 2009). Numerous behaviours are not overtly chosen and may be better termed habits, which daily lives are 'locked into' and therefore difficult to change, making the concept of carbon neutrality difficult to achieve (Jackson, 2005; Heimlich and Ardoin, 2008; Moloney *et al.*, 2010).

Engaging individuals at a deeper level raise a number of questions about the choice of techniques used in behaviour change programmes including: the appropriate focus on the individual rather than the collective; the role of social norms; and the extent to which initiatives explore what is shaping and influencing behaviours they seek to change (Moloney *et al.*, 2010). WWF (2008) recommends framing approaches around appealing to intrinsic values such as personal growth and community involvement. This potentially introduces social norms focused on sustainability issues, which recognises that behaviour is socially constructed and therefore needs to be considered at the collective or social level (Moloney *et al.*, 2010). Again, this reinforces a collective approach to addressing climate change at the community level.

Programmes that target communities largely adopt education-based techniques including information provision, workshops, events and forums (Moloney *et al.*, 2010). Other place-based programmes adopt a range of approaches to foster capacity building within communities to promote behaviour change including: supporting the formation of working groups; outreach to other community organisations; technical assistance and advice; and infrastructure programmes purchasing renewable energy technologies (Alexander *et al.*, 2007; Middlemiss and Parrish, 2010; Moloney *et al.*, 2010). The emphasis of programmes aiming to reduce energy use focus on the use of retrofitting and auditing, whereas sustainable lifestyle programmes have more of an education, information provision and capacity building emphasis (Moloney *et al.*, 2010). In a review of CBCRS in Australia, Moloney *et al.* (2010) identify the scale of programmes has some influence over the methods or

approaches adopted. Broader-scale approaches targeting households across a wide geographical area were more limited in their methods of engagement, largely relying on the use of information provision, workshops and/or auditing services.

2.5.3.1. The value and limitations of attitudinal and behavioural change for addressing climate change

Climate communication approaches expend significant resources promoting attitudinal change, however Ockwell *et al.* (2009) suggest that encouraging attitudinal change alone is unlikely to be effective in addressing climate change. The link between an individual's attitudes and subsequent behaviour is mediated by other influences such as social norms and the 'free-rider' effect (Barr *et al.*, 2003; Jackson, 2005; Ockwell *et al.*, 2009).

Despite the relatively small-scale reductions, a behavioural change programme is a good starting point for a number of reasons that Gerrard (2010) highlights: (1) they offer low and no-cost 'quick-wins' that save individuals, communities and organisations money through reduced energy use; (2) they generates interest in, and support for, subsequent actions that might be introduced, effectively sensitising residents to the notion of change; and (3) behavioural change programmes can generate a sense of purpose and momentum within residents.

2.5.3.2. Changing habits to change behaviour

Verplanken (2011) notes that although there is difficulty in changing behaviours and habits, particularly through information provision (Verplanken *et al.*, 1997), there are approaches (Box 2.9) that may change habits.

Box 2.9: Approaches to changing habitual behaviour (Verplanken, 2011).

Verplanken (2011) notes that there are three approaches to changing habits, which may result in pro-environmental actions:

1. All behaviour is habitual: As most people do not habitually purchase electrical appliances, such purchases are usually well considered. Information about environmental aspects may be one of the attributes in the decision process (Verplanken, 2011). For example, electricity use in the form of easy-to-read

information may enhance the salience and its use in the decision-making process. Pro-environmental interventions may seek to provide relevant environmental information in purchase decisions (Verplanken, 2011).

2. Targeting unsustainable behaviours *before* they become habitual: For example, new drivers may be taught to drive economically ('eco-driving'), and promote driving styles that are environmentally less taxing (Verplanken, 2011). Here, the optimal moment of intervention needs to be identified (i.e. incorporating eco-driving into the curriculum) and ensure the formation of new sustainable habits and not just prevent undesirable habits (Verplanken, 2011). Consequently, habit formation and strength should be assessed and monitored as part of the intervention. The use of implementation intentions, which incorporate the specific formulation of the cues in the behavioural environment and the required responses to those cues (Gollwitzer and Sheeran, 2006), i.e. behaving in an environmentally friendly fashion, may facilitate and maintain future habits (Holland *et al.*, 2006).
3. Stable contexts and habit discontinuity: As habits occur within stable contexts, opportunities for change may occur when such contexts are broken or unstable (Wood *et al.*, 2005; Heimlich and Ardoin, 2008; Verplanken, 2011). Referred to as the "habit discontinuity hypothesis" (Verplanken *et al.*, 2008), the core of this approach suggests that when individuals undergo changes or when the environment in which they operate changes, they may be susceptible to new information and advice in order to find satisfactory replacements of their old habits and routines (Verplanken, 2011; Whitmarsh and O'Neill, 2011).

The approaches in Box 2.10 may be seen as methods to change habits that may facilitate, increase and maintain sustainable, low-carbon actions and lifestyles.

2.5.4. Barriers to behaviour change

Behavioural engagement with (addressing) climate change is limited and are motivated by financial, health or convenience benefits, rather than environmental concern (Upham *et al.*, 2009; Wallace, 2009). This indicates a disparity between awareness and behavioural responses, consistent with the "value-action" gap (Blake, 1999; Kollmuss and Agyeman, 2002). Individual and social barriers include lack of knowledge; scepticism; feeling disempowered; competing values and priorities; perceived inaction by others; social norms; and physical/infrastructure impediments (Hinchliffe, 1996; Lorenzoni *et al.*, 2007; Whitmarsh, 2009a; Whitmarsh, 2011; Corner *et al.*, 2012).

There is a prevalent view that government is doing little to protect the environment and should be doing more to address climate change (DEFRA, 2007; Whitmarsh, 2009a). This is coupled with a lack of awareness of climate change policy in the UK (Norton and Leaman, 2004); lack of confidence in governmental and industry action (Poortinga and Pidgeon, 2003); and feelings of powerlessness as other countries will offset pro-environmental actions that Britons undertake (DEFRA, 2007; Aitken *et al.*, 2011). Consequently, this undoubtedly influences public beliefs about the need for, and efficacy of, individual action (Upham *et al.*, 2009).

Efforts promoting low-carbon behaviour change are constrained by the high carbon infrastructure and institutions within which we live, travel and work (Jackson, 2005; Ockwell *et al.*, 2009). Similar structural constraints affect financial incentives to low-carbon actions. For example, the high cost, and in some places, the lack of availability of public transport constrains the extent to which people are likely to drive less due to high petrol prices (Ockwell *et al.*, 2009). This applies to other energy choices (i.e. solar energy installation), which are unlikely to be widely adopted due to extensive initial outlay of money and access to specialist labour installation (Ockwell *et al.*, 2009). Perhaps more constraining is that institutions and society co-evolve with available technologies (Schweizer-Ries, 2008; Ockwell *et al.*, 2009). For example, road systems have evolved around the internal combustion engine, which in turn, has become a status symbol. These elements lead to 'socio-technical lock-in': a mutually reinforcing, high-carbon trajectory for technological and social development (Geels and Schot, 2007; Ockwell *et al.*, 2009).

Structural and institutional barriers to low-carbon actions require direct government intervention and are a major constraint on individual action for behavioural change (Ockwell *et al.*, 2009; Burch, 2010). Communication campaigns should be combined with structural and institutional changes to facilitate low-carbon behaviour change to overcome such barriers (Maibach *et al.*, 2008). There was a 5% increase in energy consumption from the domestic sector between 1990 and 2005, although a small decrease was observed between 2005 and 2006 (Ockwell *et al.*, 2009).

Interventions predicated on the TPB present potential problems for behavioural change through the provision of information (Verplanken, 2011). Even if information changes attitudes, subjective norms or perceptions of behavioural control, this does not guarantee changes in intentions or behaviour (Barr and Gilg, 2005; Verplanken, 2011). The link between attitudes and actions are fragile particularly when attitudes are weak, such as when individuals are uninvolved in, or ambivalent about, particular issues (Perry and Krosnick, 1995; Verplanken, 2011). Information altering attitudes may be insufficient to change subjective norms or perceived behavioural control, and thus may maintain the original intention and behaviour (Verplanken, 2011). Finally, although intentions predict behaviour reasonably well (Armitage and Connor, 2001), intentions may not be well formed; be temporally unstable (Ajzen, 2002); or there may be problems in the execution phases such as not knowing how or when to start, or simply forgetting one's intentions (Gollwitzer and Sheeran, 2006; Verplanken, 2011).

Social scientific literature, policy-makers' theories and laypeople's considerations of behavioural change is predicated on the notion that our underpinning attitudes, beliefs and cognitions are required to change before changes to actions can be made (Verplanken, 2011). This reliance on cognition changes and motivations has proven unwarranted, and is likely to fall short when changing strong habits (Wood *et al.*, 2005; Holland *et al.*, 2006). Given the severity, and scale, of (addressing) environmental challenges we are currently facing, one might argue that there is no time to wait for large segments of the population to change their attitudes, values and beliefs (Verplanken, 2011). Instead, Verplanken (2011) suggests it may be worthwhile in changing behaviour first (e.g. through legislation), and consolidate behavioural change with cognitive and motivational changes afterwards. This notion of changing behaviour first through pervasive legislation-driven changes, may unexpectedly, go down very well and lead to negative attitudes towards undesirable actions i.e. smoking in public places (Olson and Stone, 2005). Consequently, this leads to the concept of self-perception; that individuals will infer their own internal states (i.e. attitudes) from external cues (Bem, 1972). Albeit, legislation-driven changes may be perceived negatively, the feeling of coercion may fade away, and

the conditions for self-perception become favourable to consolidate pro-environmental attitudes and values (Verplanken, 2011).

2.6. ACCEPTABILITY OF, ENGAGING WITH, AND PARTICIPATING IN, COMMUNITY-BASED CARBON REDUCTION STRATEGIES

2.6.1. Acceptability of community-based carbon reduction strategies

With respect to renewable energy projects, Warren and McFadyen (2010) assert that attitudes towards, and acceptance of, such projects typically follow a U-shaped progression through time. Initially, positive responses (when no schemes are planned) are replaced by negative responses (when a local wind farm is proposed) and these, in turn, are followed by a return to positive attitudes once local residents have gained personal positive experience of the wind farm in operation (Warren and McFadyen, 2010). Previous research relating to attitudes towards, and acceptability of, community-based sustainability initiatives focus on the acceptance, indifference and tolerance of such projects (Rogers *et al.*, 2008; Warren and McFadyen, 2010). However, few studies have explored the acceptability of CBCRS, particularly within the overall context of public awareness and understanding of, engagement with, and participation in, CBCRS.

Acceptance is often viewed as a general description for evaluating something positively, and for not rejecting it. However, the absence of acceptance will not only be a problem if the reaction is negative, but will also impact on the CBCRS itself lacking the involvement of citizens and the creative initiative to achieve sustainability (Schweizer-Ries, 2008; DECC, 2010a). Ideally, acceptance will grow to consistency, efficiency and sufficiency. The active dimension of acceptance towards CBCRS and related actions is an important distinguisher between acceptance and tolerance. Figure 2.6 represents the two important dimensions of acceptance and designed according to the model of acceptance by Dethloff (2004). Figure 2.6 illustrates two important axes for the acceptance model: the perception and valuation axis (positive–negative) and the action axis (active–passive), which Schweizer-Ries (2008)

comments valuation and action are always embedded in a contextual frame and integrated social construction processes.

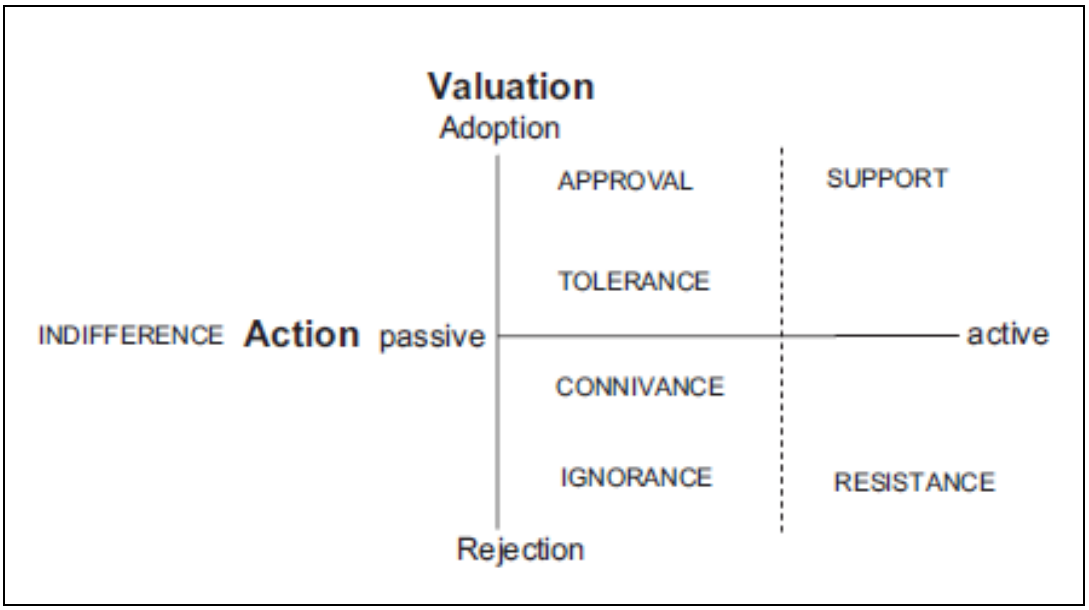


Figure 2.6: Model of acceptance subdivided into valuation and action (Schweizer-Ries, 2008).

These dimensions should not be seen as independent from each other nor as dependent, for example; a positive valuation does not automatically initiate supporting actions (Hogg and Vaughan, 2008; Schweizer-Ries, 2008). Figure 2.6 demonstrates that acceptance and resistance can be active or passive. The narrow definition of acceptance disregards passive acceptance and considers only active participation, which includes a high valuation to change the current unsustainable regime and the active contribution to addressing climate change (Schweizer-Ries, 2008). However, a broader definition of acceptance considers both active and passive elements of acting positively towards addressing climate change through direct or indirect support (Schweizer-Ries, 2008). Acceptance can be distinguished between how citizens and decision-makers accept the implementation of CBCRS however, the active acceptance of the latter is important to change the context that help other citizens to engage with, and participate in, such initiatives (Arnstein, 1969; Schweizer-Ries, 2008).

2.6.2. Engaging with community-based carbon reduction strategies

Community-based engagement is vital and already evident (Section 3.5), pioneering social innovations for addressing climate change and demonstrate real-world experiments with low-carbon sustainable living at the community level (Whitmarsh *et al.*, 2013). Having established the importance of the individual in terms of contributing to climate change; needing to deal with it's impacts; and identify, develop, support and implement climate change solutions, then engaging the public with addressing climate change is not an option but an imperative (Wolf and Moser, 2011). Although a large majority of the public recognises terms such as "climate change", understanding and emotional buy-in are far lower (Lorenzoni *et al.*, 2007). Pro-environmental behavioural responses are even more limited. Few people are prepared to take actions beyond recycling or domestic energy conservation (O'Neill and Hulme, 2009; Whitmarsh, 2009b; Whitmarsh *et al.*, 2011).

Engagement has been defined as "a personal state of connection with the issue of climate change, in contrast to engagement solely as a process of public participation in policy making" (Wolf and Moser, 2011: 550). Engagement is defined as having three key components: cognitive (knowledge/understanding), affective (emotion/interest and concern) and behavioural (action) (Lorenzoni *et al.*, 2007; Ockwell *et al.*, 2009; Whitmarsh and O'Neill, 2011; Wolf and Moser, 2011). This implies that:

> "It is not enough to simply know about climate change in order to be engaged, they also need to care about it, be motivated by it and able to take action" (Lorenzoni *et al.*, 2007: 446).

Thus, engagement encompasses what people know, feel and do (in relation to addressing climate change) (Whitmarsh *et al.*, 2013). These three facets of engagement are not related in a linear fashion; rather, they comprise complex behavioural ecologies (Whitmarsh and O'Neill, 2011). For example, behavioural change can precede cognitive or affective change, and different strategies may aim to address one, or more, of these dimensions (Whitmarsh and O'Neill, 2011). Wolf

and Moser (2011) state that much research remains to be undertaken in how to increase, balance, effectively motivate, and sustainably engage on all facets of engagement. This implies that public engagement with addressing climate change is subject to temporal variation, and that individuals' engagement needs to be facilitated in the short term and sustained in the long term. Cultural narratives and the construction of meaning in social interaction tend to touch people more deeply, even if they are not deeply knowledgeable about (addressing) climate change, and can better motivate interest and sustain engagement (Wolf and Moser, 2011).

Engagement theories are a relatively new approach to exploring peoples' responses to a range of issues (Krause and Coates, 2008; Whitmarsh and O'Neill, 2011; Whitmarsh *et al.*, 2011). These techniques have demonstrable merit in helping to understand responses towards complex issues, such as addressing climate change, but have not yet been applied to engagements with CBCRS. This research, therefore, contributes to our understanding of, and addresses this gap in academic literature relating to, public engagement with, and participation in, CBCRS. Engagement theories provide a strong conceptual and methodological technique, which focus on the cognitive, affective and behavioural dimensions. This research applies this framework (Figure 2.7) to explore what participants know about, feel towards, and (potentially) do in CBCRS.

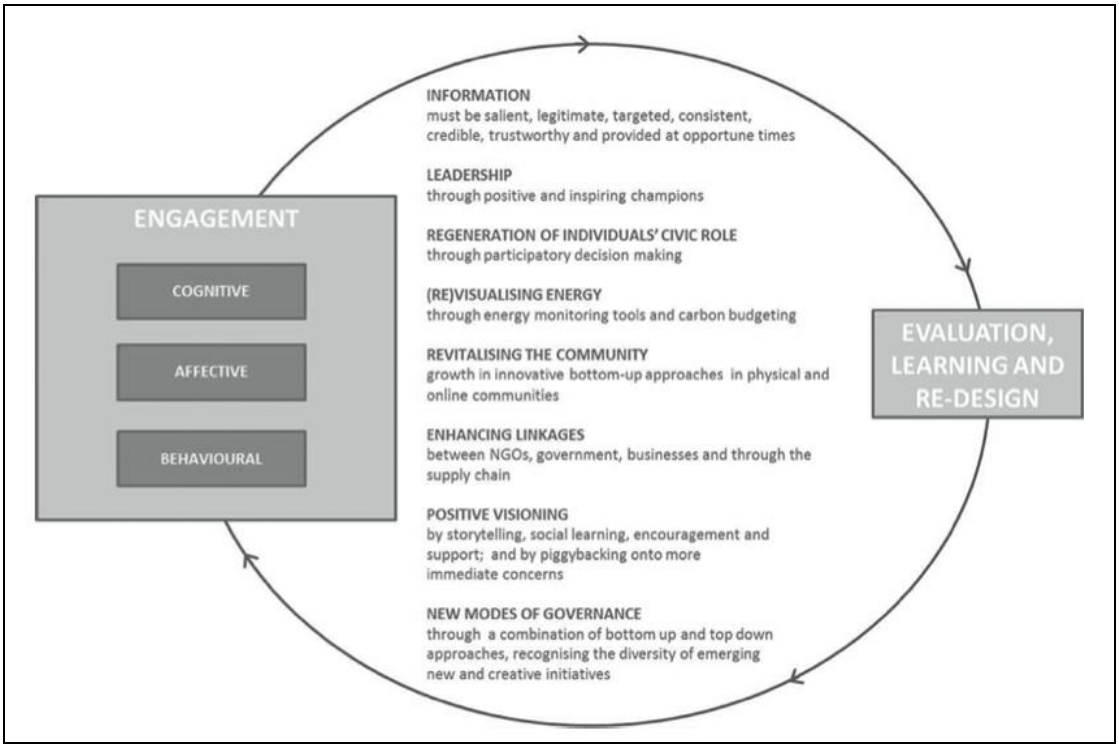


Figure 2.7: Positive influences on engagement (Whitmarsh *et al.*, 2013).

There are few detailed definitions of active and passive engagement. There appears to be an implicit understanding of active engagement meaning "what is done" with the object of engagement, and passive engagement implying "what is not done" (Speake and Axon, 2012). Active engagement refers to the intensity and emotional quality of involvement in carrying out activities with an object of engagement (Mitchell and Carbone, 2011), in this instance, CBCRS. Active engagement involves cognitive, affective and behavioural engagement. For example, people demonstrate an understanding of a local project, it's aims and methods to facilitate sustainable actions, and develop an emotional attachment to it, whether positive or negative. Active behavioural engagements with CBCRS show that people follow, and respond to, initiatives reducing their carbon footprint in various ways and reasons (Alexander *et al.*, 2007; Rogers *et al.*, 2008). Passive engagement with CBCRS illustrate that people have little understanding of the scheme implemented, have limited emotional connection with it, and do not contribute towards (the aims of) the project.

Whitmarsh *et al.* (2013) note that there are gaps in academic literature pertaining to measuring public engagement and the role of participation in decision-making processes. This thesis aims to, partly address these gaps highlighted by Whitmarsh *et al.* (2013) and, contribute to understandings of public engagement and participation in community projects aiming to address climate change and facilitate, increase and maintain low-carbon sustainable living at the community level.

2.6.3. Participation in community-based carbon reduction strategies

While Wolf and Moser (2011) state that engagement is a personal state of connection with (addressing) climate change, in contrast to engagement solely as a process of public participation in policy making. The multitude of methods people participate in CBCRS is viewed as active behavioural engagement. Conversely, non-participation or passive participation can also be viewed as a passive behavioural engagement. Thus, participation is an extension to engagement theories in the context of contributing (actively, passively or not at all) towards a community sustainability project.

People may choose to participate, and behaviourally respond, to CBCRS in a multitude of ways. This engagement may be dependent upon awareness of project activities; tailored information and feedback; and attempts to engage residents (Alexander *et al.*, 2007). There are numerous methods of participation in CBCRS that individuals can do. Such methods may be active volunteering; participation; attendance to meetings; engaging others in community projects; undertaking behavioural (i.e. energy conservation actions) and technical responses (i.e. solar panels); seeking tailored advice and feedback; and engagement with multiple organisations (i.e. voluntary, governmental, educational and commercial) (Alexander *et al.*, 2007; Middlemiss and Parrish, 2010; Moloney *et al.*, 2010; Mulugeeta *et al.*, 2010). Section 3.5 explores public participation with the AHGCNP in more depth.

Mannarini and Fedi (2009) comment that not many qualitative studies explore the subjective experience of participants in participatory settings and community-based initiatives. Consequently, there is a need for research exploring the experience of

participation in CBCRS. A review of literature pertaining to the nature of, and facilitating, community participation in CBCRS is reviewed in Section 3.3.2.

2.7. CHAPTER SUMMARY

There is widespread awareness of the issue of climate change with 99% of the public in England having heard of "climate change" or "global warming" (Whitmarsh, 2009a), with 72% of people stating that they are "well informed" about the causes, impacts and solutions of climate change, around 20% more than the EU27 average who state this (Eurobarometer, 2009). Yet, there remains a significant number (over one-fifth) who state they know little or nothing about the issue (Whitmarsh, 2009a). Individuals are shown to be aware that their behaviour and lifestyle contribute to climate change, specifically caused by energy consumption (DEFRA, 2009), and reported concern towards climate change has increased over the past two decades. However, the issue is accorded a low priority in the context of other environmental issues; health; security; and social issues (Bord *et al.*, 2000; Poortinga and Pidgeon, 2003; Ockwell *et al.*, 2009).

80-85% of people report feeling worried about climate change (Upham *et al.*, 2009); consider climate change to be a "bad thing" rather than a "good thing"; and have a negative affective response to climate change (Lorenzoni *et al.*, 2006). Yet, there is a tendency to prioritise local social and environmental issues above climate change (DEFRA, 2002). Global risks tend to be underestimated due to a natural need to concentrate on more immediate, local risks (Slovic *et al.*, 1979; Upham *et al.*, 2009). Whilst the issue of climate change is considered socially relevant, most individuals do not feel that climate change poses a prominent threat (Ockwell *et al.*, 2009). The low ranking of climate change reflects a widespread perception amongst the public that the issue is removed in time and space, rather than personally relevant, affecting future generations and other countries (Ockwell *et al.*, 2009).

Individuals in the UK report that they are attempting to reduce their environmental impact, yet these actions performed to address climate change are rarely those with the greatest impact on reducing carbon emissions (Whitmarsh, 2009b). However,

action is only taken by a minority and often not for environmental reasons, whilst others are unwilling to take action due to difficulty or financial implications associated with sustainable, low-carbon lifestyles (Whitmarsh, 2009b; Ockwell *et al.*, 2009).

Previous methods of changing behaviour, typically communication campaigns, to engage the public with addressing climate change have been insufficient (Whitmarsh and O'Neill, 2011). Interventions to change everyday behaviours often attempt to change people's beliefs and intentions, and are unlikely to be an effective means to change behaviours that have become established habits (Verplanken, 2011; Whitmarsh and O'Neill, 2011). Consequently, Verplanken (2011) argues that the formation of sustainable attitudes and actions should be embedded through the forming green habits utilising targeted behaviour change interventions, by breaking old carbon-intensive habits and embedding new low-carbon habits.

Few studies explore the acceptability of, engagements with, and participation in, CBCRS. Acceptance of such projects typically follow a U-shaped progression through time: initially, positive responses are replaced by negative responses, when a local project is proposed, and these, in turn, are followed by a return to positive attitudes once residents have gained personal positive experience of the project in operation (Warren and McFadyen, 2010). Exploring the personal state of connection with CBCRS allow for an understanding of what people know, feel and do with respect to addressing climate change at the community level, along with understanding the reasons for potential, and actual, sustained participation; a requirement for the success of CBCRS (Alexander *et al.*, 2007).

Individuals and communities have a key role in a transition towards a low-carbon, sustainable society and future (Whitmarsh and O'Neill, 2011). The path towards sustainability demands changes in human behaviour. The importance placed on major environmental issues such as climate change necessitates an understanding of how individuals respond to and engage with (or ignore) addressing climate change.

This thesis therefore contributes new understandings of public attitudes and actions towards (addressing) climate change; and engagement with CBCRS.

CHAPTER 3: OPPORTUNITIES FOR, AND CHALLENGES TO, ENABLING COMMUNITY-BASED CARBON REDUCTION STRATEGIES FOR MAINSTREAMING SUSTAINABLE DEVELOPMENT

3.1. INTRODUCTION

No single intervention can deliver the level of systemic change required to address climate change, and significant efforts are required on many fronts (Mulugeeta *et al.*, 2010). While many of the primary effects of climate change may be global, the causes are located within the activities and climate-relevant behaviours of individuals, households and communities (Whitmarsh and O'Neill, 2011). To respond effectively to climate change from its root causes, substantial lifestyle and cultural change, particularly in the developed world, will need to occur (Mulugeeta *et al.*, 2010).

Following the outcomes of successive international climate change conventions, and the failure to reach international agreement on a successor to the Kyoto Protocol, this must be counteracted by carbon reduction efforts at local levels (Mulugeeta *et al.*, 2010). The on-going effort for international agreements on efficient, fair and enforceable reductions of carbon emissions has created opportunities to focus attention at the national and local level to address climate change, as well as giving a greater impetus to small community-level solutions (Mulugeeta *et al.*, 2010).

The Low Carbon Transition Plan identifies households and communities playing a major role in building a low-carbon future (DECC, 2009a; Seyfang, 2010). It is widely understood that an integrated community-based approach to reducing carbon emissions is cost effective, larger emissions reductions are possible and importantly, local people are involved in the low-carbon future of their communities (Laukkonen *et al.*, 2009; Middlemiss and Parrish, 2010). Consequently, small scale, bottom-up interventions result in a multitude of environmental, social and economic advantages (Alexander *et al.*, 2007; Burch, 2010; Middlemiss and Parrish, 2010).

This chapter provides an overview of the factors leading to enabling CBCRS in the UK aiming to mainstream sustainable development, and facilitate sustainable, low-carbon lifestyles. This literature review will draw upon the case study of the AHGCNP, to exemplify best practice in engaging the public with addressing climate change.

3.2. MAINSTREAMING SUSTAINABLE DEVELOPMENT AND ADDRESSING CLIMATE CHANGE AT THE COMMUNITY LEVEL IN THE UK

The concept of sustainable development emerged from decades of unprecedented concern for the environment and developed from numerous international conferences, most notably the World Commission on Environment and Development (WCED) in 1987 and the Rio Earth Summit in 1992 (Mather and Chapman, 1995; Middleton, 2003; Elliot, 2006; Dresner, 2008). Sustainable development is defined as:

> "Development which meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987: 43).

The definition asserts that economies and societies are constrained by the environment that supports them and highlights two key concepts. Firstly, the concept of needs, in particular the needs of the worlds poor to which overriding priority should be given, and secondly, the idea of limitations imposed by the state of technology on the environments ability to meet present and future needs (Elliot, 2006; Dresner, 2008). Despite sustainable development becoming a common term in the vocabulary of environmental discourse, it is a contestable and ambiguous concept to which there is no widespread agreement of its application (Middleton, 2003; Williams and Millington, 2004; Dresner, 2008). For example, the concept of needs vary temporally and spatially and are difficult to define as well as the meaning of development, which can be interpreted in different ways (Middleton, 2003).

The vagueness of meaning of sustainable development can be seen as an advantage as there is scope for innovation, creativity and originality in its interpretation and

application, particularly with reference to mainstreaming sustainable development at the community level (Mather and Chapman, 1995; Hatter, 2007; Seyfang, 2010). Changing personal attitudes, actions and enabling communities to care for their own environments is outlined by the second World Conservation Strategy in 1991 as principles of a sustainable society (Mather and Chapman, 1995). The concept of sustainability is a normative concept (a desirable state), which has two dimensions: robustness against shocks (to continue over time: adapt and evolve) and effectiveness (to thrive) (Wilson, 2010). Community initiatives aiming to address climate change adhere to the dimensions of sustainability outlined by Wilson (2010) and aim to achieve environmental, social and economic sustainability (the pillars of sustainable development), exemplified by the AHGCNP in Section 3.5 (Alexander *et al.*, 2007; Charnock, 2007).

Elliot (2006) states that there are two competing notions of sustainability: strong sustainability posits that humanity should live within the planet's environmental and ecological limits (an ecocentric approach), whereas weak sustainability argues that humanity replaces natural capital and depends on human made capital such as technology (a technocentric approach). The concept of sustainable development that many subscribe to comes from the latter position (Mather and Chapman, 1995; Elliot, 2006).

Box 3.1: The current context of mainstreaming sustainable development in the UK

Since the 1987 Brundtland Report, there have been a plethora of regional and local level sustainable development initiatives in the UK, most famously Local Agenda 21 (Hatter, 2007). However, despite the output of procedures and policies, changes on the ground have been slow to achieve a sustainable future and although the UK is meeting targets set by the Kyoto Protocol, CO_2 emissions are actually increasing (Elliot, 2006; Hatter, 2007; Dresner, 2008).

The Sustainable Development Commission (SDC) argues that there is a need for sustainability in the UK. "Sustainable development is no peripheral, nice-to-have concept for prosperous times. It is the best way of delivering more for less, while ensuring that the drive for efficiencies doesn't cost more in the long run" (SDC, 2010c).

Numerous reasons exist why sustainable development has not been central to LAs: competing policy priorities; short-term budgetary cycles; environmental policies

replaced with financial drivers; and 'initiative-itis' from central government (Hatter, 2007; Urwin and Jordan, 2008). The UK's over-centralised state had reduced local government, by 2003, to being a delivery arm for central government, which subsequently failed to deliver progressive sustainable development (Alexander *et al.*, 2007; Hatter, 2007; Eadson, 2008).

Although many LAs across the UK have been hesitant to take up the challenge of community initiatives and engagement on climate change, Peters *et al.* (2010) argue that there is substantial evidence to suggest that they will have an increasingly influential and important role to perform in their capacity as a political interface between citizens and government legislation.

The aim for the UK must be to change the approach of over-centralisation to a more devolved and localised approach, capable of achieving sustainable development and addressing climate change (Hatter, 2007; Eadson, 2008; FOE, 2010). At present, LAs may be moving away from a strictly regulatory or service provision role to one of enabling action on environmental and sustainability-related problems (Burch, 2010).

3.3. COMMUNITY GOVERNANCE, PARTICIPATION AND ENABLING ACTION TOWARDS COMMUNITY SUSTAINABILITY IN THE UK

3.3.1. Community governance and enabling action towards community sustainability

The recognition that public behaviours and lifestyles will play a vital role in achieving sustainable development is one of the few points of agreement to have emerged from international environmental policy debates over the last decade. The idea that communities act as an appropriate locus for social change is related to the connected concepts of "local" and "place" (Escobar, 2001; Gibson-Graham, 2003).

The voluntary and community sectors were engaged in community governance reflecting collaborative management of community activities involving government and the third sector when New Labour came to power in 1997 (Popple and Redmond, 2000; Gilchrist, 2003; Osborne and McLaughlin, 2004; Williams, 2005). The shift of involving non-state actors in decision-making and implementation reflected a move towards local governance (Hutter, 2006), a move that has since been expanded under the UK Coalition Government's Big Society policy (SDC, 2010b).

The launch of the Big Society aims to provide citizens and local government the power they require to solve the problems they face, therefore placing communities at the centre of prioritising, planning and delivering solutions (SDC, 2010b). Critics of the proposals accuse the Coalition Government that the Big Society masks public spending cuts and puts pressure on communities to act in order to meet central government targets. Despite the criticisms, there are potential benefits to empowering citizens and local authorities to foster community action such as an integrated approach to local issues; citizen satisafaction in community participation; reduced costs; improved quality of life and stronger communities (SDC, 2010b).

The co-production (shared delivery of services) and co-governance (shared construction of policies, management and service delivery) of schemes represent the partnership between government and the community sector to address complex and important issues that require a holistic and multi-agency response (Kendall, 2003; Osborne and McLaughlin, 2004). This approach involves the community actively helping to implement important agendas relevant to the community and producing their own services. The role of local government in this drive towards effective community engagement is to unlock greater action by local authorities in identifying the best potential for place-based, CBCRS in their areas (Peters *et al.*, 2010; Roberts, 2010). Additionally, community members should be able to rely on their LA to coordinate, tailor and drive the development of a low-carbon economy in their area through co-governance of implementing community sustainability projects (DECC, 2009a; Peters *et al.*, 2010).

Communities are often seen as an instrument for implementing government policy, which inherently runs counter to the core values of developing the community and fails to value community participation (Arnstein, 1969; Popple and Redmond, 2000; Gilchrist, 2003). Therefore, significant barriers exist as contrasts between governmental and community group views of the community's function result in implications for the motivation of involvement in community activities. Viewing community activities as instrumental for government policy inherently exploits the

sector by expecting outcomes to be delivered cheaply and without the required support to make such schemes a success.

With respect to sustainability policies, the community is presented as a potential partner for government, if not seen as playing a major role, in promoting sustainable actions and activities (UK Government, 2005; DECC, 2009b). The UK government has substantial optimism about the role of communities in promoting sustainability, as well as acting sustainably:

> "Community groups can help tackle climate change, develop community energy and transport projects, help minimise waste, improve the quality of the local environment, and promote fair trade and sustainable consumption and production" (UK Government, 2005: 27).

This quote itself demonstrates an instrumental view that communities will promote sustainability and act sustainably to deliver the targets set in numerous environmental and sustainable policies. This viewpoint also reflects the notion that local organisations and communities can drive people towards a personal connection with the environment and sustainability that is not easy to engender in the impersonal relations between the individual/community and state (McKenzie-Mohr, 2000).

The concept of the Big Society sought to capitalise on the Labour White Paper Strong and Prosperous Communities in order to legitimise a change in the scale of governance to create the 'ideal citizen', one who is involved and participates in local decision-making (Moir, Pers. Com.). The concept of localisation supports the idea of communities becoming self-reliant and self-sufficient (Heinberg, 2004; Alexander *et al.*, 2007). Norberg-Hodge (2003:24) defines localisation as:

> "[enabling] communities around the world to diversify their economies so as to provide for as many of their needs as possible from relatively close to home… this does not mean eliminating trade altogether, as some critics like to suggest.

> It is about finding a more secure and sustainable balance between trade and local production."

Local governance in the form of the Big Society aims to affect individual actions and lifestyles through the local community (Aitken, Pers. Com.). Jackson (2005) reinforces this assertion and states that individual efforts to live more simply are more likely to succeed in a supportive environment. Aitken (Pers. Com.) asserts that community projects such as Transition Towns acknowledge the potential they have to address climate change at the local level:

> "If we wait for governments, it'll be too little, too late. If we act as individuals, it'll be too little. But if we act as communities, it might just be enough and just in time" (Transition Network, 2011).

The instrumental view of communities as an arm for delivering central government policies can be seen as a method of allowing communities to govern their own actions to address sustainability issues. Other evaluations also lend perspective to the role of community-based sustainability initiatives and the methods used to engage individuals and communities to adopt low-carbon, sustainable lifestyles.

Another perspective pertaining to enabling community action centres on social capital and sustainability (Evans *et al.*, 2004). Social capital is the intrinsic capacity within which individuals and their social relationships can provide the means for community action capable of achieving shared objectives, often relating to notions of trust and reciprocity (Peters *et al.*, 2010). Evans *et al.* (2004) use social capital to mean the ways in which a community builds capacity for action, through increased and strengthened network connections between individuals. Murray (2000) states that the prerequisites for social capital rest on a foundation of three requirements: (1) a sense of hope by citizens that solutions are possible; (2) sufficient opportunities for engagement by those with the necessary skills and motivation; and (3) opportunities to nurture community service life skills.

Peters *et al.* (2010) focus on three key concepts: social capital, social learning and social norms that are imperative to developing community-based pro-environmental lifestyle change initiatives. The concept of social capital focuses on collective endeavour as opposed to individualism and centres on three core components: social networks, social norms and sanctions (the processes that help to ensure that network members keep to the rules) (Peters *et al.*, 2010). Some community engagement initiatives are designed largely to utilize and enhance social capital, such as the AHGCNP (Section 3.5), which attempts to bring low-carbon living into the mainstream of everyday community life (Alexander *et al.*, 2007; Peters *et al.*, 2010). The behaviours that it seeks to promote among the residents are for environmental and social benefits, rather than individual benefit (Charnock, 2007; Peters *et al.*, 2010). As the Ashton Hayes Parish Council leads the project, it provides a sense of communal purpose encouraging local action (Peters *et al.*, 2010).

A key challenge in realising community-based carbon reduction engagement is how to incentivise individuals within a group to adopt pro-environmental behaviour for the common good (Jackson, 2005; Peters *et al.*, 2010). Community management of resources are more likely to be effective where networks and widely shared social norms exist prior to the onset of the CBCRS (Gardner and Stern, 1996; Peters *et al.*, 2010). Utilizing existing communication networks can be an effective means of disseminating information (Peters *et al.*, 2010). Motivation, whether existing or latent, is critical to strategies of development designed to engage individuals in processes of attitudinal and behavioural change (Werner and Makela, 1998; Peters *et al.*, 2010).

Community projects promoting attitude and behaviour change highlight the cost savings derived from implementing pro-environmental behaviours can be viewed as a persuasion cue i.e. advantages other than the environmental benefits associated with the actions being encouraged (Peters *et al.*, 2010). Extensive media exposure of the project in local and national media outlets is another persuasion cue that confers social benefits and influence on those who participate in the recommended sustainable lifestyle changes (Peters *et al.*, 2010). Modelling behaviour is particularly

important in developing and maintaining social norms, and has clear implications for the effective deployment of community-based projects as one person's behaviour can have a profound effect on another individual (Jackson, 2005, Peters *et al.*, 2010).

The concept of social norms attempts to inform our understanding of the social nature of human behaviour. One of the most important functions of community sustainability projects is to make a contribution to the establishment of new social norms that are more closely aligned with the imperatives of sustainable lifestyles (Seyfang and Smith, 2007; Peters *et al.*, 2010). Cialdini *et al.* (1991) in Peters *et al.* (2010) distinguish between 'descriptive' and 'injunctive' social norms utilized to encourage pro-environmental behaviours. Descriptive social norms provide us with information about what people around us normally do and enable individuals to integrate themselves with regular patterns of observed behaviour, whereas injunctive social norms imbue the individual with a sense of how others around them think that they should behave, reflecting the moral ideals of the social group (Jackson, 2005; Peters *et al.*, 2010).

The decision to adopt certain pro-environmental actions is likely to depend as much upon the existence of appropriate local facilities for engaging pro-environmental action as it is on positive attitudes (Peters *et al.*, 2010). Community-based initiatives that aim to engage individuals in the adoption of sustainable lifestyles changes operate in the context of social norms and the influence of descriptive and injunctive social norms will inevitably impact upon the extent to which engagement and subsequent participation is likely to be successful (Jackson, 2005; Peters *et al.*, 2010).

Newman and Dale (2005) claim that building agency (the capacity for individuals to act) is the basis for social capital. Limiting the discussion of capacity to the "social" is rather restrictive. Many other capacities can be outlined here (Middlemiss and Parrish, 2010). To better understand the role of grassroots initiatives encouraging pro-environmental behaviour change and promoting sustainable low-carbon communities, Middlemiss and Parrish (2010) place enthusiasm for grassroots action in the context of community capacity for sustainability. The concept of capacity is

useful to understand the context of grassroots action and by extension to understand the role in building low-carbon communities (Middlemiss and Parrish, 2010). Institutions, organisational structure and the cultures that characterise them are crucial elements of a society's development path that clearly influences the success to which we respond to climate change (Burch, 2010).

There are two important premises behind this framework. Firstly, capacity to change is afforded by both the nature of the social context and that of the agent. Secondly, agents have different capacities to act on sustainability issues according to their personal and social contexts (Middlemiss and Parrish, 2010). This framework aims to enrich the understanding of the opportunities and implications for grassroots initiatives attempting to stimulate low-carbon communities, and explore the potential for such initiatives to change the capacity of the communities in which they are active (Figure 3.1).

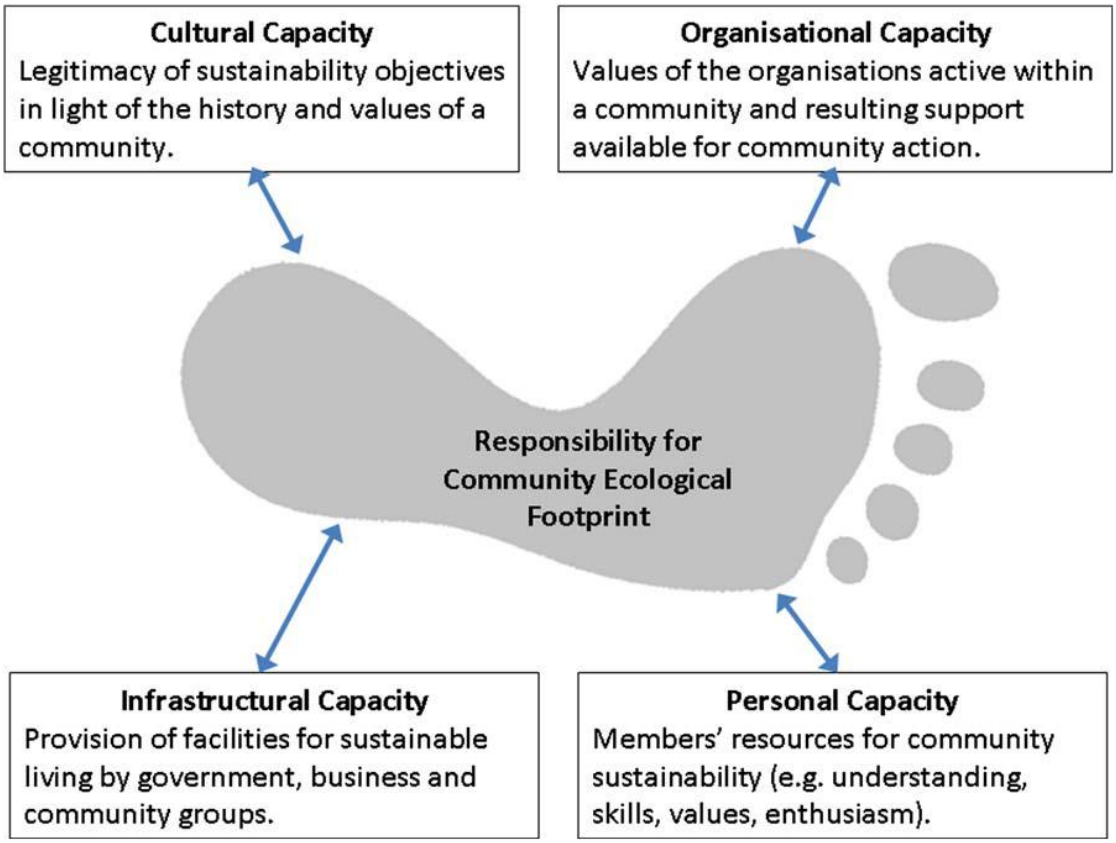


Figure 3.1: Understanding the role of community capacity in enabling responsibility for community ecological footprint (Middlemiss and Parrish, 2010).

The capacities (defined in Table 3.1) highlight impact on the ability of the community and its members to take responsibility for their ecological footprint. If any of the capacities are weak, the community's ability to fulfil its responsibility for the ecological diminishes (Middlemiss and Parrish, 2010). In contrast, if the capacities are strong, the community's ability to take responsibility for the ecological footprint is greater (Middlemiss and Parrish, 2010). Capacity is defined as the ability of the community in question and its members to make changes by drawing on the resources available to them individually and collectively (Middlemiss and Parrish, 2010).

Table 3.1: Community capacities in enabling responsibility for community ecological footprint.	
Theoretical Framework Element	**Framework Element Explanation**
Responsibility for Community Ecological Footprint	At the centre of the framework is the 'responsibility for community ecological footprint'. This responsibility is held by the community as a collective and by the individuals who constitute that community. Middlemiss and Parrish (2010) use of the term 'responsibility' draws on the interpretation through environmental justice literature as 'responsibility through ability' (Shrader-Frechette, 2002 in Middlemiss and Parrish, 2010) which posits that individuals who have the ability to make a positive change in such situations are obliged to act. The theoretical framework above applies this understanding to the context of low-carbon communities, with the level of responsibility held by the community relative to the capacity (or ability) that it has to make a 'positive difference'. Surrounding this responsibility are four community capacities that enable the community to take responsibility for their ecological footprint: those of the culture, infrastructure, organisations and individuals involved in the community.
Personal Capacity	Personal Capacity refers to the resources held by the individuals who participate in the community. Here, resources are defined very broadly to include the individual's understanding of sustainability issues, as well as their willingness to act and the skills they draw on to act.
Infrastructural Capacity	The Infrastructural Capacity of a community refers to the potential for sustainable living offered by the specific facilities available in the community. It should be acknowledged that some communities have infrastructures which are more or less conducive to sustainable living than others based on housing stock, energy, communication and transport for example.
Organisational Capacity	The Organisational Capacity of the community refers to the values held by formal organisations that are active in the community, how far these are aligned with attempts to encourage sustainability and the resources and support available through such organisations to stimulate change.
Cultural Capacity	Cultural Capacity refers to the legitimacy of sustainability as an objective given a community's history and values. This can be a matter of how sustainability is framed within a culture.

Middlemiss and Parrish (2010) highlight three ways in which grassroots action could influence communities: people altering their own actions and lifestyles; seeking to influence other members of the community; or seeking to change the social

structures they inhabit. People changing their own actions amounts to an activation of personal capacity i.e. a decision to modify practice as a result of a change in perception or understanding of a particular issue (Middlemiss and Parrish, 2010). Individuals seeking to influence other members of the community are likely to be drawing on existing infrastructural, organisational and cultural capacities to increase others' personal capacities i.e. a grassroots organisation attempting to raise awareness of existing options for low food-mile purchases (Middlemiss and Parrish, 2010).

A third approach to enable responsibility for the community ecological footprint involves people seeking to change the social structures they inhabit. This avenue would involve grassroots initiatives attempting to increase the infrastructural, organisational or cultural capacity in order to enhance other people's ability to take on responsibility for example, a group engaging other organisations to use their capacity to further low-carbon objectives (Middlemiss and Parrish, 2010). Alternatively, a grassroots organisation could provide a particular service such as energy efficiency advice, which then increases infrastructural capacity to the community (Middlemiss and Parrish, 2010). Essentially, grassroots initiatives that aim to change social structures could potentially affect all four 'capacities' however, some capacities may be easier to impact than others.

Grassroots organisations can use the different capacities to catalyse change, thus reforming social structures to allow for low-carbon, sustainable lifestyles. Better understanding of the capacities of a community can help those involved to see what facilities can be provided to empower a community to take action to address climate change, what strengths exist within the community and the boundaries that exist for communities to take responsibility for their environmental impact (Middlemiss and Parrish, 2010).

Burch (2010) asserts that solving the problem of inaction on climate change may be not as simple as allocating additional funds or developing new low-carbon technologies to function in a community as Middlemiss and Parrish (2010) suggest.

Capacity has emerged as a critical precursor to action on climate change. Defined as a country's ability to reduce GHG emissions or enhance natural sinks (Winkler *et al.*, 2007 in Burch, 2010), mitigative capacity is viewed as the ability or potential of a system to respond successfully to climate vulnerability and change (Adger *et al.*, 2007 in Burch, 2010). Despite mitigative and adaptive capacity being comprised of resources such as financial capital and availability of technological options, lack of progress on climate change is not due to a lack of technological options and prohibitive costs (Pacala and Socolow, 2004), but due to institutional and cultural barriers and the over-centralisation of power to enable communities to take action (Burch, 2010; SDC, 2010b). The assertions by Burch (2010) suggest the need to look beyond theories of technological innovation or rational assessments of costs and benefits to analyses of the socio-cultural and psychological factors that identify motivations and, more specifically, barriers to action.

Burch (2010) identifies four categories of barriers that impede action on climate change that may be present including (a) cultural/behavioural barriers, (b) structural/operational barriers, (c) regulatory/legislative barriers and (d) contextual barriers can serve to constrain effective policy-making and action on climate change.

Table 3.2: Barriers to action and influence on local action addressing climate change.

Barriers to action	Description of barrier and influence
Structural/operational barriers to action	Local structural/operational barriers refer to the features of the organisations structures and procedures that influence the day-to-day activities of the civic staff and the longer term policy direction of the local authority. Burch (2010) identifies the following structural/operational barriers to action on climate change in local authorities: • Term limits imposed on politicians affect local authorities ability to make long-term targets, decisions and measures, • Absence of a long term strategic sustainability plan impairs the effectiveness of a decentralised organisational model for sustainability in the local authority, • In some local authorities, there are few or no incentives built into the budgetary system for that stimulate innovations on climate change, • Community consultations can inhibit efficient decision-making, particularly if the process is not a bottom-up

	approach, • Budgetary cycle forces planning strategies focused on short-term, rather than long-term, • Individual mandates of local authority departments lead to inconsistent goals, both temporally and spatially, • The majority of development and environment decisions are routine and follow 'carved-in-stone' guidelines which result in difficulty creating new structures for sustainability.
Regulatory/legislative barriers to action	Regulatory/legislative barriers at the local level include the quality of sustainability and environmental policies, policy tools that the local authority has at its disposal as well as interactions between multiple levels of government. Regulatory/legislative barriers arise from inconsistencies between policies at national, regional and local levels, policy conflicts and out-of-date environmental policy act as inhibitors to climate change mitigation (and adaptation) strategies: • Lack of local control over the main drivers of emissions, • Support for communities by the local authority and/or national government that has been promised by not materialised, • Absence of a long-term sustainability strategy means that inconsistencies in goals and approaches between different local authority departments occur and are not revealed, • Change of local political leadership and priorities towards sustainability indicate policies, approaches and climate change responses fluctuate, • Abstract sustainability policy frameworks lack necessary specification for implementation, • Lack of detailed implementation plans coupled with monitoring and review mechanisms result in weak measures and processes to improve regulation and approaches, • Action is constrained by the need to work within the context of existing programs and meet targets.
Cultural/behavioural barriers to action	Cultural/behavioural barriers refer to the organisational ethos, habitual modes of practice, personalities and values within institutions which may deeply influence the success of climate change action. Leadership and commitment to tackling climate change needs to be matched with sufficient financial or human resources. Leadership by local politicians on climate change can be restricted to opposition of policies and public attitudes can constrain politicians to lead on sustainability issues. The following are cultural/behavioural barriers to action:

	• Combative relationships between the culture of local authorities (policy-oriented level) and culture of providing climate change responses (provision and maintenance), • Formalised approach to introducing new policies exacerbates educational and cultural differences that exist between groups within the local authority, • Scepticism of new policies and initiatives due to fear of new approaches not supported by adequate funds, • Policies attempt to change culture living within the local area abruptly and generate opposition to sustainability policies, • Policy cultures are reactive rather than anticipatory, • Short-term desire on to be re-elected inhibits long-term or deeply transformative decision-making by local politicians, • Absence of leadership at regional or national level inhibits action at local level, • Strong organisational culture of risk aversion: new initiatives must be proven to have worked successfully elsewhere.
Contextual barriers to action	Broader economic and political structures tightly constrain the set of available individual and collective responses to climate change. Contextual issues may either facilitate or inhibit action as they shape the environment within which the local authority functions and influences the values and priorities of the public. Contextual barriers to action include the following: • Severe climate change impacts may force adaptation instead of mitigation and a focus on short-term planning, • Public perception of climatic impacts and perceived experience of climatic events influence the attitude of public to pursue (a) no response, (b) mitigation responses or (c) adaptation responses, • Competing priorities inhibit commitment to climate change action, • Communities which are resistant to change inhibit substantial action on climate change for local authority and politicians.

It is clear that multiple barriers to action on climate change are at play at any given time in a LA, and these factors are interlinked (Ockwell *et al.*, 2009; Burch, 2010). It is suggested that these barriers occur during specific phases of the process of planning responses to climate change. Overcoming these barriers can serve to stimulate and sustain effective climate change policymaking and consequently, actions on climate

change. This suggests that the same factor characterised as a barrier can also be an enabler of action. The current method of designing and managing our communities, both urban and rural, has produced a deeply unsustainable pattern of development (Seyfang, 2010; Burch, 2010). However, just as inertia builds up behind barriers, so too can innovation, collaboration and awareness gather force as the various facets of communities interact (Seyfang and Smith, 2007; Burch, 2010).

In a more subtle understanding of the role of grassroots initiatives for sustainability, Seyfang and Smith (2007) and Seyfang (2010) call on 'transitions management', characterising community initiatives as niches of innovative opportunities to experiment with new practices and norms with the potential for wider social transformation that may then become accepted more generally in society (Middlemiss and Parrish, 2010). Entrenched cognitive, social, economic, institutional and technological processes lock individuals and communities into unsustainable trajectories and lock out sustainable alternatives (Seyfang and Smith, 2007). In the 'socio-technical regime', the benefits of grassroots innovations go beyond the intrinsic environmental and social impacts of their particular niche activities as they also offer space for the creation of new systems of provision, albeit on a small and experimental scale (Seyfang and Smith, 2007; Seyfang, 2010; Seyfang and Haxeltine, 2010). The transitions literature develops the notion of socio-technical niches as protected spaces where new social and technical practices can develop (Seyfang, 2010; Seyfang and Haxeltine, 2010).

Green niches allow for widespread participation and focus on learning more methods of sustainable living (Seyfang and Smith, 2007). Niche-based approaches that resonate with widespread public concern catch on, get copied, become adapted and spread as they explore problems and search for solutions to context-specific issues (Seyfang and Smith, 2007). Niches alone will not seed wider change. Work on multi-level socio-technical change identifies tensions and contradictions within incumbent regimes as opening niche opportunities and driving transformations (Geels and Schot, 2007; Seyfang and Smith, 2007). These niches have the potential

under certain circumstances to usurp the dominant regime (Geels, 2002; Geels and Schot, 2007), which describes a transition in the socio-technical system (Figure 3.2).

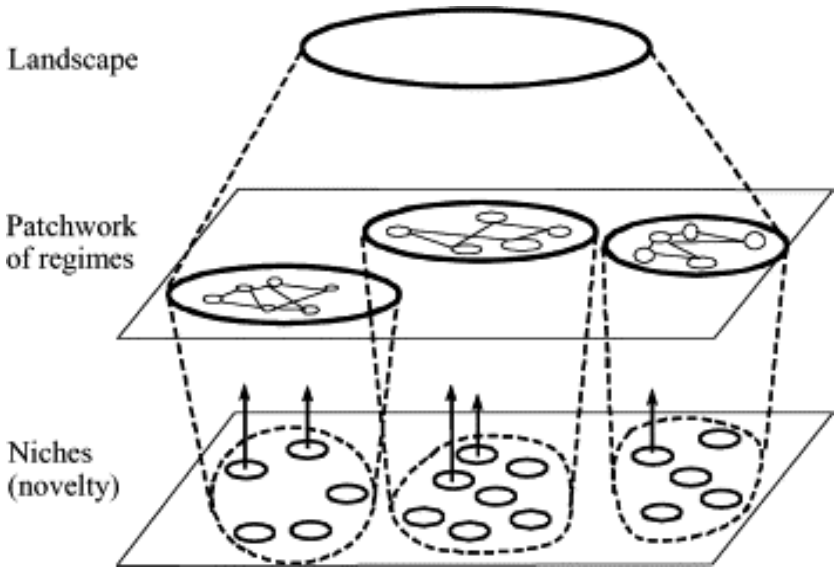


Figure 3.2: The Multi-Level Perspective nested hierarchy (Geels, 2002).

There are significant challenges related to the diffusion of grassroots innovations, namely their small scale within a wider unsustainable regime makes them difficult to scale up and replicate and their ideological basis can result in value clashes with mainstream settings resulting in difficulty transferring ideas and practices achieving sustainable development (Charnock, 2007; Seyfang and Smith, 2007; Seyfang, 2010; Seyfang and Haxeltine, 2010). Middlemiss and Parrish (2010) argue that while transitions theory is a useful model of grassroots initiative development to aspire to, Seyfang and Smith (2007) recognise that dominant individualist and consumerist lifestyle aspirations run counter to community collectivism and therefore progression from a niche to more general acceptance is rather optimistic.

Progression from a niche to more general acceptance could be dependent on the "community capacity" identified by Middlemiss and Parrish (2010), who argue that transitions theory does not deal with community capacity for change that may be fundamental for such projects to exist in the first place i.e. only communities with some level of empowerment and resources are able to produce niche activity. Focusing on the social system that encapsulates technological development as a way

to critique the incumbent system goes some way to understanding why behaviours remain locked into certain unsustainable practices (Mulugeeta *et al.*, 2010).

3.3.2. Community participation and enabling action towards community sustainability

The influence communities have on decision-making is an important aspect of participation in CBCRS (Mannarini, 2011). Although the majority of public involvement practices entail only consultative forms of participation classified as 'tokenism', such practices allow for community members to voice their needs and be heard by institutions (Arnstein, 1969; Mannarini, 2011). Public involvement practices are tools for shaping communities that utilise and develop the resources that lead members to make decisions about the issues confronting them (Mannarini and Fedi, 2009; Mannarini, 2011). Public participation plays a relevant role in aiming to improve the environmental, social and economic conditions in community settings (Mannarini and Fedi, 2009; Mannarini *et al.*, 2010).

Community participation is a method that not only takes into consideration public perspectives towards addressing environmental issues by directly involving communities, but allows members of a community to state their own needs and values whilst permitting them to participate in decisions on environmental issues (Wiesenfeld and Sanchez, 2002; Mulugeeta *et al.*, 2010). Given the importance of community participation to the success of any community-led initiative to address environmental issues, the conditions that encourage sustained community participation in environmental initiatives need to be met (Wiesenfeld and Sanchez, 2002; Alexander *et al.*, 2007; Rogers *et al.*, 2008; Mulugeeta *et al.*, 2010). Wiesenfeld and Sanchez (2002: 631) state that community participation addressing environmental issues are most viable as the community:

> "…is a level of community organisation that stands midway between the individual and society as a whole, wherein there is frequent interaction among the members and certain values, feelings, needs and resources are shared in a given space and time."

Box 3.2: Common characteristics in community sustainability projects

Sanchez (2000) in Wiesenfeld and Sanchez (2002) identifies the following characteristics that are common with community initiatives addressing environmental issues:

- Community participation is a process that takes place at different stages of a community's activity, when the community seeks to achieve goals of importance that motivate members to take action;
- Participation is a voluntary act that occurs when members become aware of the value of participatory action and view it as desirable and become involved in the activities undertaken in the initiative;
- The development of community participation varies according to context and time;
- Community participation is built on the nature of the initiative in which it became involved, the stated goals to be achieved, access to resources such as funding and the political conditions that form a context conducive to participation;
- Future participation is affected by the quality of previous experience in the initiative therefore, if the previous experience and attitude towards the scheme is favourable, participation is likely to continue;
- The contribution of participants to decision-making is established in the course of the initiative.

To make participation work, a strong motivation is required (Mannarini *et al.*, 2010). Studies have focused on the cost/benefit model to understand individual motivations for collective action, viewing the decision to act collectively as the outcome of a rational evaluation of drawbacks and advantages (Mannarini *et al.*, 2010). Costs of participation are usually related to energy level; economic loss; and time consumption, but also physical risks; social isolation; and stigma whereas the benefits of participation are not only material but psychological and social ones: satisfaction, sense of belonging and social status (Mannarini *et al.*, 2010). Table 3.3 identifies the characteristics to encouraging citizen participation in community-based initiatives.

Table 3.3: Encouraging citizen participation in community-based initiatives.

Characteristic	Description of Characteristics
Benefits/costs	Perceived benefits exert a positive influence on the willingness of being involved in future participatory settings,

	and conversely, perceived costs are detrimental, thereby discouraging participation.
Emotions	Positive emotions enhance willingness of repeating similar experiences, and conversely, negative emotions depress it.
Trust in institutions	High levels of trust in institutions to positively affect participation in community-based initiatives.
Sense of community	High levels of sense of community are required to increase the probabilities of investing future time and energy in addressing community issues in participatory settings

There is a perception by politicians that individual residents and communities are to some extent assumed to be both in favour of reducing their carbon emissions and willing to undertake carbon reduction behaviour unquestioningly (Wiesenfeld and Sanchez, 2002; Barr *et al.*, 2003; Middlemiss and Parrish, 2010). It is unreasonable to assume that the introduction of any community initiative in any geographic area will be met with high participation rates as soon as an appropriate level of service is provided (Werner and Makela, 1998). Although the role of service provision is evidently vital in assisting residents to reduce their domestic carbon emissions, Werner and Makela (1998) argue that there are numerous factors that are involved in the decision to reduce individual environmental impacts, and that understanding these variables could lead to an uptake of carbon reduction behaviours (Bonnes and Bonaiuto, 2002). Such variables include individual awareness, perceptions, attitudes, behaviours and contexts that influence carbon reduction behaviours and sustain pro-environmental behaviours. The decision to adopt pro-environmental behaviours such as carbon reduction is likely to depend as much upon the existence of appropriate local facilities for engaging in action as it is on positive environmental attitudes (Peters *et al.*, 2010).

CBCRS offer a participatory approach to reducing carbon emissions in a community context. Participatory engagement methods combined with the devolution of decision-making to community-scales may increase the quality, legitimacy and capacity of climate and carbon reduction policy (POST, 2010). Public involvement in the implementation of low-carbon measures has significant advantages: community ownership of local renewable technologies could reduce local opposition (Rogers *et*

al., 2008; Warren and McFadyen, 2010). Yet involvement in such strategies may appeal to those already engaged in environmental issues and relatively privileged (POST, 2010).

It is well noted that few residents are keen to take an active role in community-based sustainability initiatives, and that community members were often reluctant to assume responsibility and look to outside agencies for leadership (Arnstein, 1969; Smith *et al.*, 1999; Rogers *et al.*, 2008). These types of involvement would be categorised as relatively low-level participation, inherently inferior to control of projects or technical assistance, which is deemed necessary for empowerment and increasing social inclusion (Arnstein, 1969; Alexander *et al.*, 2007; Rogers *et al.*, 2008). Hierarchies of participation have attracted criticism for failing to recognise that a conscious choice of non-participation or peripheral participation can be valid and empowering as the choice to actively participate (Rogers *et al.*, 2008). The opportunity for community control of community-based sustainability initiatives may not be fully considered by residents (Rogers *et al.*, 2008). The concept of increasing public participation in local policy has only really gained prominence in the last 10 years, and is matched by a lack of understanding and uncertainty about what participation entails and is actually for (Smith *et al.*, 1999; Rogers *et al.*, 2008).

Arnstein (1969) asserts that citizen participation is a categorical term for citizen power, more specifically; it is the redistribution of power that enables citizens to be deliberately included in political and economic processes. Arnstein (1969) proposes a typology of participation and non-participation corresponding to the extent to citizens' power in determining the end product (Figure 3.3).

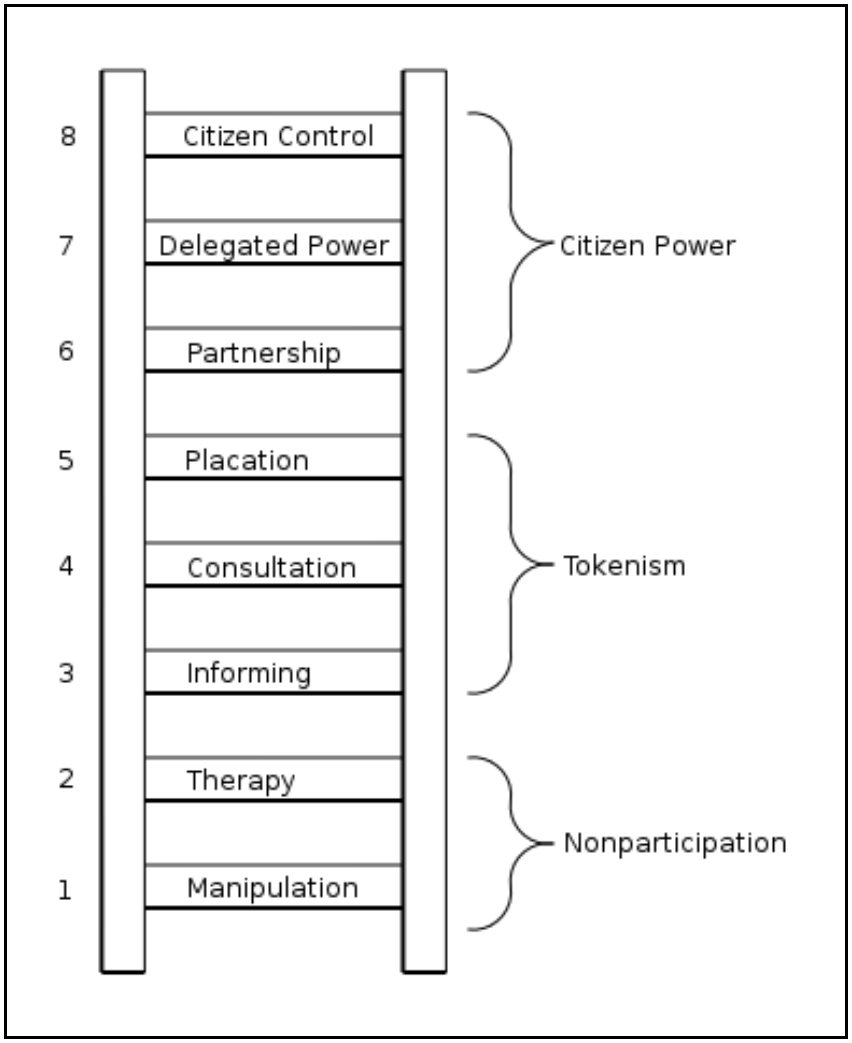


Figure 3.3: A ladder of citizen participation (Arnstein, 1969).

The bottom rungs of the ladder are 'manipulation' and 'therapy' that relate to levels of non-participation that have been contrived by some to substitute for genuine participation. Their real objective is not to enable genuine participation but to enable power-holders to 'educate' or 'cure' participants (Arnstein, 1969). Rungs 3 and 4 progress to levels of 'tokenism' and allow the participants to hear and have a voice. Under these conditions citizens lack the power to ensure that their views will be heeded by the powerful. Even if not allowed to make a final decision, public involvement practices are still tools for responsible and effective policies (Mannarini, 2011). 'Placation' is simply a higher level of tokenism because the ground rules allow the have-nots to advise, but power-holders retain the right to make decisions. Further up the ladder are levels of citizen power with increasing degrees of decision-making clout where citizens obtain the majority of the decision-making process or

full managerial power (Arnstein, 1969). The ladder of citizen participation is a simplification but does illustrate that there are significant gradations of citizen participation (Arnstein, 1969).

3.4. GOING CARBON NEUTRAL: UNDERSTANDING THE ROLE OF COMMUNITY-BASED CARBON REDUCTION STRATEGIES IN THE UK

3.4.1. The need for community-based carbon reduction strategies

Technical solutions alone are unlikely to deliver anywhere near the reductions required and that social solutions must play a major role in addressing climate change (Moriarty and Honnery, 2008). The expansion of renewable energy generation is certain to amount to significant reductions emissions however, technological solutions to addressing climate change appear to proceed in the absence of meaningful social change and the corresponding shifts in lifestyle patterns (Mulugeeta *et al.*, 2010). However, the significance of community level initiatives should not be underestimated (Mulugeeta *et al.*, 2010).

Earlier attempts to change energy-related behaviour were targeted at individuals as consumers of energy. More recently, European localities have started to transform themselves into community-based initiatives where individuals take the role of citizens rather than consumers, and gain the capacity to work together to transform their energy infrastructure at the local level (Heiskanen *et al.*, 2010). There are four types of instruments to change behaviour in relation to environmental problems: regulations and incentives; education and awareness raising; community management of environmental resources; and references to moral, religious or ethical principles (Gardner and Stern, 1996; Ockwell *et al.*, 2009; Heiskanen *et al.*, 2010). In European societies, the first two methods are used almost exclusively, and in the case of energy consumption, with little success (Heiskanen *et al.*, 2010).

Energy conservation programmes have suffered from an overly individualistic focus, assuming that individuals fully control their behaviour and make decisions in isolation however, this is not the case (Jackson, 2005; Heiskanen *et al.*, 2010). Such

programmes have attempted to influence behaviour via economic incentives like grants and rebates, or via education and persuasion such as information campaigns (Barr *et al.*, 2003; Ockwell *et al.*, 2009; Heiskanen *et al.*, 2010; POST, 2010). While some programmes have been successful, many have faltered leading to scepticism about the possibilities to change current carbon intensive behaviour patterns.

Many of the behavioural change programmes suffer from a conceptual problem: methodological individualism (Heiskanen *et al.*, 2010). Drawing on purely economic and psychological representations of behaviour fail to recognise the socially grounded nature of human behaviour (Ajzen, 1991; Jackson, 2005; Heiskanen *et al.*, 2010; Winter, 2010). Individual decisions to save energy in order to conserve natural resources are framed by social dilemmas and individual efforts are useless unless others participate (Ockwell *et al.*, 2009; Heiskanen *et al.*, 2010). Such approaches appear insufficient to produce the significant shifts in behaviour required for addressing climate change (Ockwell *et al.*, 2009). However, energy-related behaviour is shaped by conventions and socio-technical infrastructures that are largely beyond individual control (Geels and Schot, 2007; Seyfang and Smith, 2007; Heiskanen *et al.*, 2010). These problems, together with the invisibility of the consequences of our actions lead to a sense of disempowerment that is a major obstacle to low-carbon lifestyles (Burch, 2010; Heiskanen *et al.*, 2010). CBCRS present, at least, a partial solution to these problems of individual (and collective) behaviour change.

There are many community level or community-led initiatives worldwide that are achieving numerous environmental, social and economic advantages by addressing climate change and if scaled-up would play a significant role in climate stabilisation efforts (Mulugeeta *et al.*, 2010). However, the route to building CBCRS is not always simple as institutional and policy barriers exist that prevent action on climate change or at best place it further down the priority list (Burch, 2010; Mulugeeta *et al.*, 2010).

3.4.2. The need for resilient communities in addressing climate change

Hopkins (2010) calls for communities that are able to withstand environmental, social and economic shocks and using such stressors on the community system as an

opportunity for change. Resilience is defined as the capacity to absorb shocks and still maintain function (Folke, 2006; Turner, 2010). Folke (2006) and Ibrarraran *et al.* (2010) also identify additional aspects of resilience that concern the capacity for renewal, reorganisation, adaptation and development. External shocks to communities have the potential to create opportunity for doing new things, for innovation and development (Folke, 2006; Seyfang and Smith, 2006). Resilience provides a broad approach not just about keeping the status quo, but is also about the ability of the system to adapt, innovate and transform under certain conditions (Haxeltine and Seyfang, 2009). The potential of the resilience perspective is seen as being able to shift policies that aspire to control change in systems assumed to be stable, to managing the capacity of socio-ecological systems to cope with, adapt to, and shape change (Folke, 2006; Barr and Devine-Wright, 2012).

3.4.3. Top-down vs. bottom-up approaches to engaging citizens in community-based sustainability

Top-down and bottom-up approaches to CBCRS reflect the level of interaction involved and the influence that participants have in community processes of carbon reduction, in other words engagement (Schweizer-Ries, 2008; Ockwell *et al.*, 2009; POST, 2010). At one end of the engagement spectrum are one-way communications (top-down) and at the other are approaches using dialogue, where the public actively participate in decision-making (POST, 2010). Community projects rely on engagement for two related purposes. Engagement to change attitudes can be used to build support for policies like financial measures or changes to infrastructure (POST, 2010). Alongside other policies, individual behaviour change is widely seen as an important tool for reducing emissions (POST, 2010). Achieving behavioural changes through engagement approaches is a complex challenge.

A bottom-up approach is defined by individual voluntary support and networking within the community to realise a certain environmental initiative, and is initiated by an individual or organisation (Schweizer-Ries, 2008). Bottom-up approaches to carbon reduction, with benefits flowing directly and obviously to the community are more effective than conventional top-down approaches (Warren and McFadyen,

2010). Wiesenfeld and Sanchez (2002) argue that community initiatives for sustainability that employ bottom-up rather than top-down approaches to complex human problems tend to be driven by local community priorities, emphasise the strengths of people and communities including their capacity to achieve community priorities, emphasise the need for democratic participatory processes to understand the meaning that agents ascribe to problems of concern to communities with the aim of overcoming these issues (Peters *et al.*, 2010; Warren and McFadyen, 2010). The promotion of a community-based approach may not only facilitate the achievement of government carbon reduction targets but may also help to engender a more involved and informed public debate regarding climate change and carbon reduction (Seyfang and Smith, 2007; Warren and McFadyen, 2010).

Top-down approaches are specified by regulations and/or legislation that will guarantee the development of a project, but could lead to rejection (Schweizer-Ries, 2008). Government could force people to be 'green', if voluntary action is not working, through the introduction of legislation such as the London Congestion Charge, which resulted in a dramatic fall in vehicles in the city centre (Ockwell *et al.*, 2009). Other possible regulations include fees for waste collection; road charges based on vehicle emissions; road tolls; and the increasingly high profile idea of personal carbon allowances (PCAs) (Wallace, 2009). Government regulation that forces people to be green is consistent with public expectations for the government to take action on climate change and can also address the 'free-rider effect' (Ockwell *et al.*, 2009). Forcing people to be green can also help reduce the 'attitude-behaviour gap' whereby people have to change their actions regardless of anti-environmental attitudes and social norms (Ockwell *et al.*, 2009).

Despite regulation being a seemingly useful way of overcoming barriers to low-carbon behaviour, governments are generally reluctant to take regulatory action because of fear of loss over precious political support and potential public backlash (Ockwell *et al.*, 2009). There are also uncertainties and risks involved in a top-down approach. People's actions may revert if the 'forcing factor' is removed and policies like green taxes only influence action at a superficial level, they do not properly

engage the public in the issue (Ockwell *et al.*, 2009). There are some aspects of behaviour that are unable to be regulated for example, forcing someone to turn off the lights (although the idea of PCAs may be able to achieve this) (Ockwell *et al.*, 2009; Wallace, 2009).

Ockwell *et al.* (2009) suggest a third approach to achieving public engagement with climate change and one which bridges the gap between top-down and bottom-up approaches. In this approach, change comes via a process where the public engages with the issue and takes voluntary action (bottom-up), which involves demanding government take action (top-down) by introducing regulations to control high carbon behaviour.

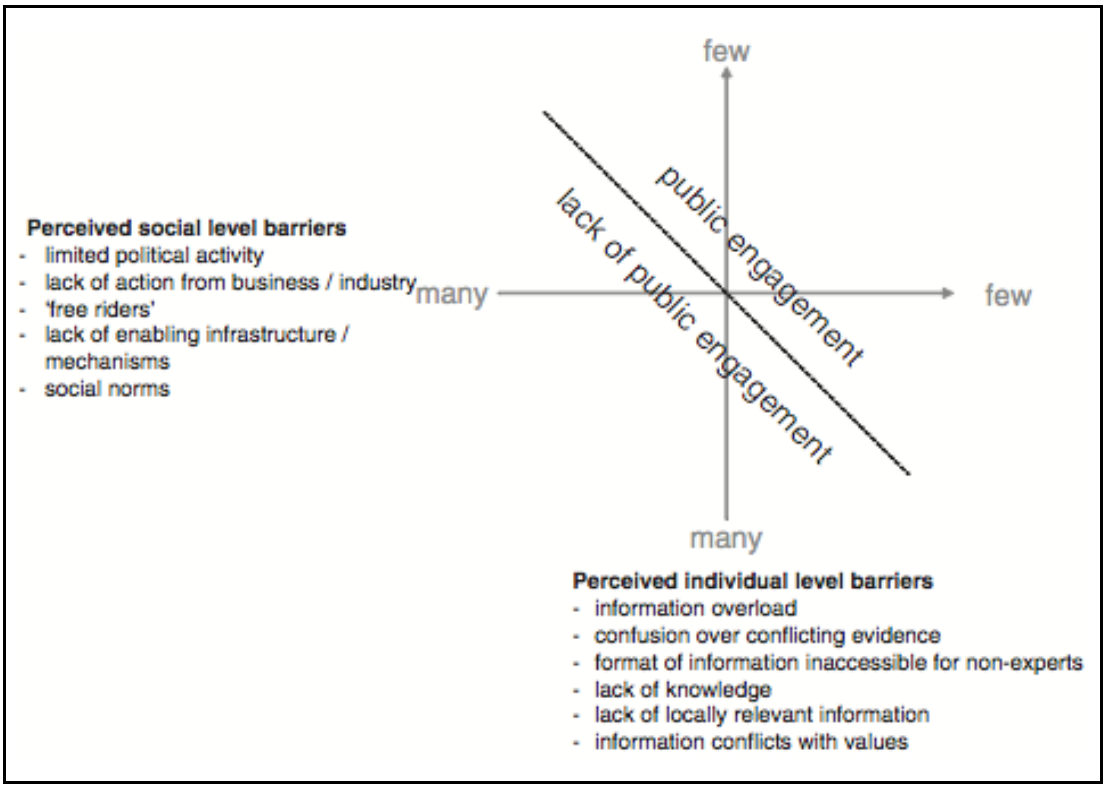


Figure 3.4: The need to address bottom-up and top-down barriers to engagement (Ockwell *et al.*, 2009).

These approaches can be combined to take advantage of the benefits that accompany each approach while minimising any barriers to implementation in a project named 'Eco-City' (Schweizer-Ries, 2008). The bottom-up element builds upon

participation whereas the top-down element creates the context in the sense that houses are built with energy-saving standards and energy supply is derived from renewable sources (Wisenfeld and Sanchez, 2002). These top-down measures are being communicated to the public using participative actions (Schweizer-Ries, 2008). Opportunities are offered in order to concretely participate including buying a share in the photovoltaic field around the city that creates a sense of community ownership and as a result, influences public opinion and support for the project (Schweizer-Ries, 2008; Warren and McFadyen, 2010). It is only via a combination of both top-down and bottom-up approaches that the unprecedented challenge of climate change can be effectively addressed (Ockwell *et al.*, 2009).

3.4.4. Defining community-based carbon reduction strategies

There are few existing definitions that are appropriate for defining CBCRS (Box 3.3). Using the term sustainable communities is a broad concept and includes all aspects of resource use and emission production which is beyond the scope of this study; such as water, sanitation, crime, socio-demographic growth and decline (UK Government, 2005; Schweizer-Ries, 2008). This research does not subscribe to the definition of energy sustainable communities that Schweizer-Ries (2008) adopts and only considers the energy dimension however, acknowledges that all dimensions are linked and influence one another.

Box 3.3: Defining community-based carbon reduction strategies

Heiskanen *et al.* (2010: 7586) define 'low-carbon communities' as:	"…forms of co-operation and collaboration that aim to reduce the carbon intensity of their members' lifestyles by providing amenable contexts and mechanisms that encourage behaviour change."
Seyfang and Smith (2007: 585) define 'grassroots innovations' as:	"…networks of activists and organisations generating novel bottom-up solutions for sustainable development and sustainable consumption, solutions that respond to the local situation and the interests and values of the communities involved. In contrast to

mainstream business greening, grassroots initiatives operate in civil society arenas and involve committed activists experimenting with social innovations as well as using greener technologies."

This research acknowledges the definitions of low-carbon communities by Heiskanen *et al.* (2010) and grassroots innovations by Seyfang and Smith (2007). However, this thesis defines CBCRS as a network of organisations and residents working in collaboration that aim to reduce domestic and whole-community carbon emissions in the local community through changing behaviour and using green technologies to facilitate, increase and maintain sustainable, low-carbon lifestyles.

3.4.5. Opportunities for, and barriers to, establishing community-based carbon reduction strategies and mainstreaming sustainable development

CBCRS are one example of action towards achieving sustainable development, self-sufficiency and addressing climate change (Alexander *et al.*, 2007). Locally based initiatives can help to reorganise society's infrastructure away from carbon intensive forms of energy production and consumption in order to make them more efficient, sustainable and more receptive to renewable energy (Mulugeeta *et al.*, 2010). Initiatives that address the issues of climate change and sustainability constitute a growing interest in a socially-driven innovation platform, bringing together citizens to act collectively in creative ways on energy and climate issues (Mulugeeta *et al.*, 2010).

A plethora of community-based action that addresses sustainable development, particularly the issues of climate change and peak oil are taking place at the local level in the 'social economy' (comprising the voluntary sector, community groups and social enterprise), rather than being LA-led (Seyfang, 2010). It is postulated that community level initiatives hold the potential to ground climate change policy in a much more visible way to the everyday practicalities of energy use than more 'top-down' measures have been able to change (Ockwell *et al.*, 2009; Peters *et al.*, 2010). However, little is known about the nature of, and success factors for, the development and diffusion of 'bottom-up' (often social) innovation for sustainability emerging directly from communities (Seyfang, 2010).

Box 3.4: Understanding the various forms of carbon reduction strategies

There are various types of carbon reduction strategies for example, the AHGCNP and Bollington Carbon Revolution are examples of place-based or CBCRS (Alexander *et al.*, 2007; Middlemiss and Parrish, 2010; Seyfang, 2010). Heiskanen *et al.* (2010) highlights other styles of carbon reduction initiatives such as a city-regional partnership programme aimed at transforming the level of action on climate change by local authorities, universities, businesses and citizens through a carbon reduction pledge system similar to the CRed community carbon reduction pledge system (CRed, 2006; Gerrard, 2010).

These strategies use various methods to achieve their primary aim of carbon reduction through awareness, attitudinal change, behavioural change or uptake of various domestic low-carbon technologies (Alexander *et al.*, 2007; Heiskanen *et al.*, 2010; Middlemiss and Parrish, 2010). This research, however, focuses on place-based approaches to reducing domestic and whole-community carbon emissions.

Irrespective of the type of carbon reduction strategy, reductions in emissions; efficient use of resources; creating local jobs; reducing fuel poverty; strengthening the local economy; and becoming more resilient to extreme weather events are more likely to be achieved where the local residents are actively engaging with, and participating in, an integrated community project (Alexander *et al.*, 2007; Burch, 2010; Heiskanen *et al.*, 2010; Middlemiss and Parrish, 2010; SDC, 2010a).

One of the difficulties that climate change advocates often face is how to demonstrate low-carbon initiatives in action, and the potential value they bring to general wellbeing and social learning (Mulugeeta *et al.*, 2010). Building an inventory of exemplars in low-carbon, sustainable lifestyles can offer value in providing an evidence base for policy makers and community actors to be better informed about scaling up action towards community carbon reduction (Mulugeeta *et al.*, 2010).

Within the current climate of scientific debate on climate change, the challenge is to better understand and harness the creative energies of community-led solutions and adapt them for wider mainstream settings to replace the current unsustainable regime, having been given greater emphasis in the last decade (Mulugeeta *et al.*, 2010; Peters *et al.*, 2010; Seyfang, 2010).

Grassroots initiatives for sustainability and pro-environmental change have seen greater impetus in recent years as the subject of climate change has risen up the

scientific, political and social agenda (Middlemiss and Parrish, 2010). Through empowering communities to come together to tackle issues of local priority and concern such as climate change, multiple and wider sustainability benefits can be achieved such as reliable and efficient transport networks, improvements to local health and well-being, improving the local built and natural environments and making communities more cohesive (SDC, 2010a).

Box 3.5: Factors affecting community-based carbon reduction strategies

Initiatives encouraging pro-environmental change suffer from intrinsic challenges such as the need for particular skills and resources to become established and then continue to develop and rely on people with limited power, resources and ability to influence others (Middlemiss and Parrish, 2010; Seyfang, 2010; Warren and McFadyen, 2010). There are communities who have plans to establish a CBCRS that are rejected by their Parish and Local Councils and not given the opportunity to implement an initiative that focuses on climate change mitigation and/or adaptation (Charnock, 2007; Laukkonen *et al.*, 2009).

Grassroots initiatives are motivated by enthusiastic and dedicated volunteers who often face challenges in running such initiatives for sustainability including hostility from local people, difficulties in securing funding and 'burn out' as the strain of volunteering with limited support takes its toll (Middlemiss and Parrish, 2010; Seyfang, 2010). One of the major difficulties in developing community-based strategies addressing climate change is public opposition and hostility (Rogers *et al.*, 2008). Lack of financial and other resources means that community-based initiatives are often ill-equipped to cope with financial and political shocks, regardless of environmental contexts, and are poorly prepared to take advantage of opportunities for greater influence (Seyfang, 2010).

Community initiatives for sustainability are strongly affected by the nature of the community the initiative addresses and the capacity of agents (individuals or the community) leading the initiative (Wiesenfeld and Sanchez, 2002; Middlemiss and Parrish, 2010). The capacity varies according to the opportunities and challenges that each particular community presents however, grassroots-led pro-environmental change involves people altering their own actions and lifestyles, seeking to influence other members of the community or seeking to change the social structures they inhabit (Seyfang and Smith, 2007; Laukkonen *et al.*, 2009).

The success of such bottom-up initiatives depends on their ability to inspire and draw in voluntary participants and most importantly to maintain their interest (Alexander *et al.*, 2007; Middlemiss and Parrish, 2010). Mainstreaming sustainable development through CBCRS is now seen as an important long-term policy objective for integrating societal goals of living within ecological limits with the more tangible aims of enhancing well-being at individual and household levels (Mulugeeta *et al.*, 2010).

The following case study demonstrates a significant and creative approach towards addressing climate change at the community level to achieve local environmental, economic and social sustainability. It is important to recognise the diversity of CBCRS in terms of scale and format as such projects have become widespread in the UK over the past decade. There are a plethora of community initiatives that aim to mobilise community action and encourage engagement to address climate change, including the Transition Towns Network (Hopkins, 2008; Haxeltine and Seyfang, 2009; Seyfang, 2010); Low Carbon Zones, London (London Development Agency, 2010); Carbon Neutral Biggar, Scotland (Barthelmie *et al.*, 2008); and Bollington Carbon Revolution, Cheshire (Middlemiss and Parrish, 2010). These projects are an emerging and evolving approach to community level sustainability (Hopkins, 2008).

3.5. LEADING BY EXAMPLE: THE ASHTON HAYES GOING CARBON NEUTRAL PROJECT

Demonstrating best practice in domestic and whole-community carbon reduction as a well-established and exemplar case study is the AHGCNP (Alexander *et al.*, 2007). Comprising of 1,000 people and 350 houses, Ashton Hayes is situated 6 miles east of Chester. Within the context of encouraging and promoting sustainability, 'green thinking' and self-sufficiency of communities, the Parish Council of Ashton Hayes voted to become England's first carbon neutral community in November 2005, and launched in January 2006 with the assistance of the University of Chester providing administration, reporting and analysis services (Alexander *et al.*, 2007; Charnock, 2007).

Although climate change was not a major concern that had worried villagers previously, the enthusiasm of a CBCRS in Ashton Hayes was met with an unexpected degree of enthusiasm (Charnock, 2007). The Parish Council agreed to the proposal of a project with a desire to let future generations know residents had tried to "do their bit" to address climate change (Alexander *et al.*, 2007; Charnock, 2007; BBC News, 2007a).

The University of Chester made a five-year commitment to supporting the project, calculating the village's annual carbon emissions and conducting household surveys (Alexander *et al.*, 2007; Charnock, 2007). The high profile launch event, attended by over 400 people, was covered by local and national press that provided considerable exposure to potential sponsors for the project (Alexander *et al.*, 2007; Charnock, 2007). The response from residents during the launch highlighted community concern about climate change, accompanied by a strong willingness to act but with little idea where to start and what to do (Charnock, 2007). The launch event focused on setting the context for the project; providing practical advice on energy saving measures; and outlining the planned steps in the process of attempting to become carbon neutral (Alexander *et al.*, 2007; Charnock, 2007).

The community-led initiative grew rapidly in its first year, with a large proportion of village residents actively participating (Alexander *et al.*, 2007; Hope and Alexander, 2008). The project aims to allow residents in Ashton Hayes to offset emissions by reducing the amount of energy they consume, and install low-carbon technologies (BBC News, 2007b).

Alexander *et al.* (2007) state that it was critical to maintain momentum after the launch, and this was achieved through the circulation of newsletters and regular updates to the projects' website. The project has become a high-profile media success story attracting funding from a multitude of sponsors: including an award for £26,500 over two years to support communication to a wider audience which brought total project revenues to over £37,000 within six months of the project being established, and an £86,558 grant from Carbon Connections UK (University of East Anglia) to conduct a feasibility study into a new approach for generating electricity in the community utilising wind, solar and biomass sources (Alexander *et al.*, 2007; Hope and Alexander, 2008). This growth in interest has stemmed from the emergence of the term 'community renewables' within mainstream energy policy and a historically highly centralised energy infrastructure in which power stations are often remote from centres of population, which Warren and McFadyen (2010) argue has created a psychological distance between people and energy generation.

The AHGCNP was designated a low-carbon community by the DECC and awarded £500,000 (DECC, 2010a). This funding was spent on renewable energy generation technologies which power part of the community including a renewable energy CHP plant (DECC, 2010a). The installation of low-carbon technologies to the school may increase the acceptability of such devices elsewhere, which has had some degree of success with respect to public acceptance of renewable energy in the village (Charnock, 2007; Schweizer-Ries, 2008).

In 2006, a survey was conducted to establish the 'baseline' of household and whole-community carbon footprints allowed for the monitoring and evaluation of the actions taken (Charnock, 2007; University of Chester, 2008). Each household surveyed was provided a tailor-made list of suggested actions that they can take to reduce their emissions. Resident's actions in the four months after the launch of the project in January 2007 resulted in a 1% reduction in emissions (Charnock 2007). Annual follow-up surveys conducted in the community indicated a 20% emissions reduction during the first year (Alexander *et al.*, 2007; Hope and Alexander, 2008). Presently, the AHGCNP has so far cut carbon dioxide emissions by 23% assisted by residents working together, sharing ideas and through behavioural change (Ashton Hayes Going Carbon Neutral, 2010b).

The project's 'Big Rules' (Figure 3.5) sets out its aims and outcomes of the initiative which the village residents are encouraged to follow. These 'rules' also recognise the barriers that some people may face such as behaviour change (Alexander *et al.*, 2007). Fundamentally, the project encourages everyone in the village to participate in reducing their environmental footprint and states that it is 'non-political' and 'non-confrontational' in order for the rural community to live in harmony (Ashton Hayes Going Carbon Neutral, 2010a).

Figure 3.5: The rules by which the project operates (Alexander *et al.*, 2007).

The volunteers within the community also bring a wide range of skills to the project that allows for individuals to contribute to the range of tasks that make the initiative successful. A number of volunteers assist with the technical aspects of carbon footprint calculations and administrative support i.e. photographic and film making skills, which maintain residents' awareness of the directions the project is taking and the activities that are occurring (Alexander *et al.*, 2007; Ashton Hayes Going Carbon Neutral, 2010c). The creative initiative of the local community of Ashton Hayes should be recognised as a significant contribution to achieving the aims of the project. Village residents have suggested ideas on how the community can address climate change, and the project encourages this by implementing suggestions and reporting the findings to the Parish Council (Ashton Hayes Going Carbon Neutral, 2010c).

In addition to the benefits of reducing the carbon footprint of the village and saving money on energy bills, some residents identify a renewed sense of community as one of the most considerable benefits of the project (BBC News, 2007a; BBC News, 2009).

Householders are taking a multitude of actions, from switching to low energy light bulbs, insulated walls and lofts to installing solar panels (reduced their energy bills by up to 50% as a result) whilst also investigating the feasibility of setting up a renewables-powered microgrid to serve a part of the village to enable further reductions (Charnock, 2007; University of Chester, 2008). Almost all residents recycle and many are enthusiastic to install solar panels and wind turbines, which has contributed towards a significant reduction of the community environmental footprint (BBC Liverpool, 2007). The primary school produces its own vegetables for the school kitchen, installed a solar panel that heats water, and a wind turbine contributes to the building's power supply (BBC Inside Out, 2007).

Alexander *et al.* (2007) and Charnock (2007) reflect upon the reasons for the successful implementation of the AHGCNP, shown in Table 3.4.

Table 3.4: Reasons for successful implementation of the Ashton Hayes project (Alexander *et al.*, 2007; Charnock, 2007).

Number	Reason
1	The Ashton Hayes project is community led, both in the initiation of the idea and the high degree of community involvement as this idea began to take form in practice.
2	Considerable effort was made after the initial launch of the scheme (media coverage, development of the website www.goingcarbonneutral.co.uk) to maintain the project's momentum.
3	The initiative was driven from the start by a diverse multi-agency partnership of villagers, businesses, the University of Chester and local government.
4	The participation of the local primary school ensured considerable interest among local children and through them, their parents and wider family members were intrigued about the project. Charnock (2007:79) comments that when "…people from larger conurbations ask us how they can replicate our enthusiasm in a large community we suggest they focus on introducing the ideas via the Parish Councils and primary schools, which have a close affiliation with the public."
5	The key role of a small number of dedicated, highly motivated individuals played in driving the project forward should not go unnoticed and not be underestimated and this is a key issue in terms of future sustainability of the project in regard to ongoing participation. Furthermore, success of the project is also down to the hard-working band of 30-50 volunteers who regularly offer their skills to benefit the project.

6	Charnock (2007) states that there is no doubt that the support of the Parish Council of Ashton Hayes has been crucial as it supplies the project with a high degree of respectability.
7	The project has also been supported and encouraged by Chester City and Cheshire County Councils, who have not put up any obstacles towards achieving the aims of the project but have assisted with implementing community ideas as best as possible. Furthermore, acknowledgement should also go to DEFRA in London who have not only supplied grant support but also a high level of support and advice when needed.

Alexander *et al.* (2007) highlight that the impacts of the AHGCNP are the focus of a four year evaluation that commenced in the summer of 2007 which consists of two parts:

1) A quantitative study of the actions taken by residents since May 2006 and of the carbon reductions achieved through the implementation of these actions,
2) A qualitative study of participation, which will aim to assess the extent to which the project has diffused through the local community and what barriers remain to continued, and wider, participation.

Alexander *et al.* (2007) argue that within the development of their evaluation methodology, they have attempted to locate the concept of carbon neutrality within the wider consideration of sustainable development. Informed by the concept of the need to find a balance between ecological, economic and social concerns along with carbon neutrality within sustainable development, the evaluation of the AHGCNP is pursued across three aspects: its environmental, economic and social impacts. The project has had noticeable environmental, economic and social impacts, highlighted in Table 3.5.

Table 3.5: The environmental, economic and social impacts of the Ashton Hayes project (Alexander *et al.*, 2007).

Impact	Description of impacts
Environmental	In spring 2006, baseline surveys were initiated to measure the carbon footprint of the village. Analysis revealed that 95% of households had less than the EST recommended thickness of loft insulation and 75% used the car on a daily basis with the average household with two residents and two cars. The data collected was also used to calculate a carbon footprint for each household by means of a bespoke carbon calculator. Average values per house type were multiplied by the number of houses of each type within the village, to calculate the total carbon footprint for the village (see Figure 2) was 4,766 tonnes per annum. Following this, an information pack was gathered to recommend actions to reduce the village's carbon footprint which were categorised as follows: • Short term/low cost, • Medium term/medium cost, • Long term/high cost. Following this, during the first year of data collected, a 20% reduction in emissions was reported. Recommended steps by which the carbon footprint of the village can be reduced have been identified and disseminated. Feedback included individual household carbon footprint information and a letter explaining the overall outcomes of the survey. Future tasks include evaluating to what extent the villagers of Ashton Hayes have acted upon these recommendations.
Economic	Alexander *et al.* (2007) argue that the level of consumption within the village needs to be achieved in a way that does not deplete the overall capital stock of a community which includes man-made, human and natural capital. Alexander *et al.* (2007) state that two types of economic benefits can be identified: 1) <u>Potential for local suppliers:</u> The results of the household survey show considerable opportunities for village residents to reduce their energy bills both through increased insulation and the installation of low-carbon technologies. Moderate to high uptake of these recommendations might be expected allowing opportunities for local retailers and installers. The uptake of higher cost measures is likely to be lower, however, three households have installed either wind turbines or solar panels and a local company is offering free surveys to households and a contribution to the project for every installation. 2) <u>Direct benefits to supporting businesses:</u> In terms of economic benefits the project has brought, two local companies have developed close links with one another as a result of their involvement, recognised the complementarity of expertise in

	their organisations and have gained significant financial benefits through partnership. Another benefit of business–university links have involved direct sourcing of graduate employees without the need for agency fees, saving one company an estimated £5000. One company has achieved increased success in winning contracts as a result of another company supporting their brand while gaining consultancy income. Respondents cited the benefits of their enhanced reputation with existing clients and economic gains in terms of reduced energy bills as a result of the installation of low energy light bulbs.
Social	1) <u>Community Participation:</u> To be truly sustainable, socially as well as environmentally and economically, its members need to be directly involved in the decision-making process that affects its future (Arnstein, 1969). The consideration of community participation in this project is an important aspect to the success of the project, and participation has been considerable. Community members have retained considerable control over the project and the implementation was driven by residents within the village. To be truly sustainable, the capacity of the community for self-reliance and self-management need to have a permanence that allows the project to continue in the future and sustain momentum (Middlemiss and Parish, 2010). The level of activity and participation within the community is growing rapidly and an appeal for volunteers had to be made to help maintain this continued growth of activity. Local residents have offered to become members of working groups set up to manage the development and day-to-day operation of the initiative and some residents have gone one step further and have established 'Carbon Clinics', where residents can obtain and exchange advice and information on a variety of related topics. 2) <u>Equality of participation and benefits:</u> Central to the idea of a sustainable community is the notion of equal rights of community members, both present and future, to participate in the community and its activities. However, participation in environmental initiatives is not equally distributed and varies in relation to socio-demographic factors. Alexander *et al.* (2007) argue for a consideration of those who have participated in the scheme is an important element of the continuous evaluation of the project. Ashton Hayes measured socio-economic status using house price and found that rates of participation in the household survey were highest (55%) in those parts of the village where houses were most expensive and lowest (36%) where houses were least expensive.

3.5.1. Evaluating the Ashton Hayes Going Carbon Neutral Project

The Going Carbon Neutral Project has been successful with placing emphasis on local community engagement, generating real economic benefits and establishing the basis for a significant reduction in carbon emissions (Alexander *et al.*, 2007; Charnock, 2007). A key challenge for the community of Ashton Hayes remains how to make the transition successfully from the initial excitement of involvement to sustained participation in the project (Alexander *et al.*, 2007; Heiskanen *et al.*, 2010). Steel *et al.* (2006) in Alexander *et al.* (2007: 73) suggest that the majority of "…people are attracted to short-term action based roles rather than sustained participation in neighbourhood governance structures". Central government consistently expresses concern over climate change and the active role that business and local communities should have in doing something about it (Alexander *et al.*, 2007). The long-term sustainability of the project will depend on whether its aims continue to merge with those of wider political agendas and whether those agendas deliver the resources and opportunities necessary for genuine community engagement (Alexander *et al.*, 2007).

Similar to Bollington Carbon Revolution is the extent to which members of Ashton Hayes act on their personal capacity in a community context (Middlemiss and Parrish, 2010). A major aspect of the project's success is attributed to the initiative acting as an arena in which individuals are empowered to act (Alexander *et al.*, 2007; van Aalst *et al.*, 2008). The project organisers themselves along with village residents hold a wide range of skills that the project attempts to harness such as carbon footprint calculations; renewable energy advice and support; report writing; press releases; and film making skills (Ashton Hayes Going Carbon Neutral, 2010c). The high levels of personal capacity in Ashton Hayes have resulted in a sustainable group attempting to achieve its aim of becoming carbon neutral. Working with numerous partners such as the University of Chester, Ashton Hayes Parish Council, University of East Anglia, RSK Group plc and Chester City Council, the project began to change the structure of carbon reduction opportunities available in the village, and the city with the introduction of CRed Chester, thus increasing infrastructural and organisational capacity (Charnock, 2007; Middlemiss and Parrish, 2010).

Warren and McFadyen (2010) state that bottom-up approaches to carbon reduction, with benefits flowing directly and obviously to the community are more effective than conventional top-down approaches, which this case study clearly demonstrates. Through engagement with the grassroots, the activities that emerged in Ashton Hayes have public ownership and participation that consequently, have made the project successful.

3.6. CHAPTER SUMMARY

The failure of international climate change conventions has created opportunities to focus attention at the national and local level to address climate change (Mulugeeta *et al.*, 2010). Small, community level initiatives aiming to address climate change and mainstream sustainable development have the potential to reduce carbon emissions substantially (Alexander *et al.*, 2007; Hope and Alexander, 2008; Heiskanen *et al.*, 2010; Mulugeeta *et al.*, 2010). CBCRS need to be democratic; sensitive to local needs; embed the notion of energy services rather than energy commodities; and rely on the cooperative impulse of community members (Mulugeeta *et al.*, 2010). The organisation of CBCRS can run bottom-up or top-down. These approaches are distinguished by the level of interaction and ownership that participants have in the community processes of carbon reduction (Schweizer-Ries, 2008; Ockwell *et al.*, 2009).

The principal opportunity for establishing CBCRS relate to environmental and socio-economic benefits such as reduced car use; planting trees; increased recycling; reduced domestic and whole-community carbon emissions; local job creation; skills development; personal growth; civic engagement; and stronger senses of community (Arnstein, 1969; Alexander *et al.*, 2007; Charnock, 2007; Seyfang and Smith, 2007; Burch, 2010; Heiskanen *et al.*, 2010; Middlemiss and Parrish, 2010; Seyfang, 2010). Assessing the impacts of CBCRS, Seyfang and Smith (2007) note small local projects may appear almost irrelevant at city-scale or above, but if wider policies lead to larger numbers of them, there is every reason to expect them, in aggregate form, to have proportionate impact. CBCRS can deliver opportunities for

significant carbon reduction where top-down measures struggle. Community groups have knowledge and experience about what works in their localities and what matters to local people. Consequently, they can be well placed to present sustainability issues in ways more meaningful, personal and directly relevant as well as facilitate, increase and sustain behavioural change towards sustainable lifestyles (Seyfang and Smith, 2007).

CBCRS provide an opportunity to overcome the principal problem that acting individually residents are disempowered and stuck within current socio-technological regimes (Jackson, 2005; Seyfang and Smith, 2007). Such initiatives can have ambitions beyond the micro-level and contribute critically towards change at the regime level (Geels, 2002; Seyfang and Smith, 2007). Community-based sustainability projects provide substantial opportunities for fostering trust and co-operative working; local participation and leadership; environmental awareness raising; education and promotion; changing attitudes and actions towards sustainable living; engaging people in sustainability issues in their daily lives; and developing new ways of working towards sustainable development (Alexander *et al.*, 2007; Seyfang and Smith, 2007; Rogers *et al.*, 2008; Middlemiss and Parrish, 2010; Whitmarsh and O'Neill, 2011).

Challenges confront community-based sustainability initiatives from their inception. Establishing an initiative requires a particular combination of skills; key individuals and champions; resources; and supportive contextual factors (Alexander *et al.*, 2007; Charnock, 2007; Seyfang and Smith, 2007; Middlemiss and Parrish, 2010; Seyfang, 2010). Grant funding and voluntary participation common amongst community initiatives pose significant problems (Charnock, 2007; Seyfang and Smith, 2007; Middlemiss and Parrish, 2010; Seyfang, 2010). Consequently, Seyfang and Smith (2007) comment that initiatives spend 90% of their time simply surviving and only 10% delivering the activity.

The case study exemplified in this chapter serves as an illustration of how much can be achieved when the collective ingenuity and creativity of people is harnessed.

Developing and participating in CBCRS is not easy and takes considerable time and commitment. The very notion of community engagement goes against existing socio-cultural norms that promote individualism (Seyfang, 2010; Mulugeeta *et al.*, 2010). However, there is likely to be enthusiasm for such initiatives and desire for participation, but support from organisations and LAs will be required to facilitate projects and participation (Weisenfeld and Sanchez, 2002; Charnock, 2007; Rogers *et al.*, 2008).

It is questionable as to how adequate grassroots initiatives are for responding to the scale and urgency of the climate challenge as most of the examples highlighted in this chapter are relatively limited in scale and there is no estimate as to how long it would take for them to roll out across the whole of society (Ockwell *et al.*, 2009). Peters *et al.* (2010) suggest that the effectiveness and sustainability of CBCRS lies in the durability of attitudinal and behavioural changes in the community.

The development of CBCRS has been unsystematic in the UK, and for this to become a widespread mode of carbon reduction practice, a more intricate understanding of attitudes and actions towards addressing climate change and CBCRS is required (Rogers *et al.*, 2008). This thesis aims to contribute towards the understanding of attitudes and actions towards addressing climate change, and public engagements with, and participation in, CBCRS.

Chapter 4 presents a new part of this thesis, discussing and justifying the philosophical and methodological approaches of this research.

CHAPTER 4: A PHILOSOPHICAL AND METHODOLOGICAL APPROACH FOR INVESTIGATING ADDRESSING CLIMATE CHANGE AT THE COMMUNITY LEVEL

4.1. INTRODUCTION

This chapter outlines and describes the philosophical position of this research and the methodological approaches used to collect and analyse data The philosophical foundations and methodological approach of this study were considered in depth, before the methodological techniques used to collect data answering the research question were explicitly defined. This chapter justifies the paradigmatic foundation, and methodological approach, of this thesis. This study is underpinned by a pragmatic paradigm and utilises a mixed methodological approach, and argues that this method is the most appropriate for investigating addressing climate change at the community level.

To achieve the aims of this study, primary data was generated from questionnaires and focus groups. Questionnaires were designed to allow for an understanding of household awareness, attitudes and actions towards addressing climate change and CBCRS. Focus groups were employed to follow up interesting themes that arose from the results and analysis of the questionnaires, and explored public engagements with, and participation in, CBCRS. This combination of techniques was used to construct a comprehensive understanding of addressing climate change at the community level, and the opportunities for and barriers to mainstreaming sustainable development through triangulation of data.

4.2. TOWARDS A PRAGMATIC PARADIGM

4.2.1. Research Paradigms

Philosophical ideas or paradigms largely influence the practice of research and need to be explicitly identified as this information justifies the choice of quantitative, qualitative or mixed methods approaches taken in the study (Tashakkori and Teddlie, 1998; Creswell, 2009). A paradigm is defined as the:

> "…basic belief system or worldview that guides the investigator, not only in choices of method but in ontologically and epistemologically fundamental ways" (Guba and Lincoln, 1994: 105).

Thus, a paradigm or worldview is a basic set of beliefs that guide action. It is easier to conceptualise different research paradigms if imagined that they lie along a continuum rather than as individually, easily definable entities. The four main paradigms along this continuum are positivism, post-positivism, pragmatism and constructivism, with the extreme paradigms at each end of the axis being positivism and constructivism (Guba and Lincoln, 1994; Tashakkori and Teddlie, 1998; Creswell, 2009). Different paradigms represent different views on the nature of reality (ontology), how we gain knowledge of what we know (epistemology), the role values play in research (axiology), the process of research (methodology) and the language of research (rhetoric) (Tashakkori and Teddlie, 1998; Creswell and Plano Clark, 2007). These different stances influence how researchers conduct and report their inquiries.

There are some researchers who view quantitative and qualitative methods to be grounded in fundamentally incompatible philosophical paradigms (Creswell, 2009; Blaikie, 2010). While these associations are often present, they should not imply that quantitative and qualitative methods are essentially incompatible (Tashakkori and Teddlie, 2003; Creswell, 2007; Bryman, 2008). The divides between quantitative and qualitative research methods are associated with epistemological questions (questions about the nature of knowledge), and ontological questions (the nature of the 'real world') (Bryman, 2008; Blaikie, 2010; Newing, 2011).

4.2.2. Adopting a Pragmatic Paradigm

Researchers adopting a pragmatic paradigm emphasise the research problem and the questions generated to use all approaches available to understand the problem (Tashakkori and Teddlie, 1998; Creswell, 2009; Savin-Baden and Howell Major, 2013). Pragmatism may be defined as a middle ground between positivism and constructivism, utilising both deduction and induction, and employing an objective

and subjective stance which assumes that an external reality does exist but denies that truth can be totally determined (Cherryholmes, 1992; Guba and Lincoln, 1994; Tashakkori and Teddlie, 2003; Creswell, 2007). Pragmatism thus offers an immediate and useful middle position: philosophically and methodologically (Greene, 2007; Morgan, 2007).

Box 4.1: The characteristics of Pragmatism

Greene (2007), Creswell (2009) and Savin-Baden and Howell Major (2013) state that a pragmatic paradigm has the following characteristics:

- Pragmatism is not committed to any one system of philosophy and reality;
- Individual researchers have a freedom of choice in terms of methods techniques and procedures of research that best meet their needs and purposes;
- Truth is what works at the time of the study;
- It is not based in a dualism between reality independent of the mind or within the mind;
- Pragmatic researchers look to the 'what' and 'how' to research based on its intended consequences;
- Pragmatism views knowledge as being both constructed and based on the reality of the world we experience and live in; and
- Pragmatists agree that research always occurs in social, historical, political and other contexts.

Taking into account these characteristics, pragmatism opens the door to mixed methods research (Tashakkori and Teddlie, 2003; Creswell, 2009). Tashakkori and Teddlie (1998), Creswell (2007) and Johnson *et al.* (2007) comment that in practice, pragmatism:

- Utilises multiple methods of data collection to best answer the research question;
- Employs both deduction and induction;
- Collects quantitative and qualitative sources of data collection;
- Focuses on the practical implications of the research; and
- Emphasises the importance of conducting research that best addresses the research question or problem.

Therefore, a pragmatic paradigm can be defined as a 'what works' paradigm, in other words choosing the combination or mixture of methods and procedures that works best for answering the research questions posed (Cherryholmes, 1992; Tashakkori and Teddlie, 1998; Creswell, 2007; Greene, 2007; Savin-Baden and Howell Major, 2013).

The purpose of pragmatic qualitative research is to link theory and practice. As pragmatists believe that knowledge can be gained through a variety of methods,

providing a rationale for mixed methods research (Section 4.2.3) (Tashakkori and Teddlie, 2003; Creswell, 2009), pragmatists reject the scientific notion that social inquiry was able to access the 'truth' about the real world solely by virtue of a single scientific method (Savin-Baden and Howell Major, 2013).

Researchers adopting a pragmatic approach understand that the social world is more subjective than the natural world, and seek to understand human behaviour and experiences as they occur in their natural setting (Savin-Baden and Howell Major, 2013). Consequently, researchers using this approach seek to discover and understand a phenomenon or process from the perspectives and worldviews of the people involved (Merriam, 1998; Caelli *et al.*, 2003; Savin-Baden and Howell Major, 2013). Pragmatic studies offer "a comprehensive summary of an event in the everyday terms of those events" (Sandelowski, 2000: 336). Rather than having a goal of thick description (such as ethnography); theory development (grounded theory); or interpretive understanding of experience (phenomenology), pragmatic qualitative research aims for a description of an experience or event as interpreted by the researcher (Neergaard *et al.*, 2009; Savin-Baden and Howell Major, 2013).

It is argued that pragmatism has overcome the paradigmatic differences between positivism and constructivism in order to produce a new paradigm combining the strengths of both (Cherryholmes, 1992; Tashakkori and Teddlie, 1998; Creswell, 2007; Greene, 2007; Creswell, 2009).

4.2.3. Rationale for Mixed Methods Research

Pragmatism often employs a mixed methodology research design, utilising at least one quantitative and one qualitative method (Tashakkori and Teddlie, 1998; Bryman, 2007; Creswell, 2009). Adopting a mixed methods approach, data may be discovered that mono-method research may not reveal (Denzin, 1970; Greene, 2007; Creswell, 2009). The use of data analysis strategies within a mixed methodology enables the researcher to integrate quantitative and qualitative data, and allows for data analysis strategies to complement each dataset (Greene, 2007). The use of multiple methods of data collection allow for interesting lines of inquiry exposed through one method

to be explored further in greater depth through another method (Bryman, 2006; Bryman, 2008; Blaikie, 2010).

Quantitative and qualitative methods offer different insights into the social and behavioural dimensions of addressing climate change as each method is better suited to answering different types of research questions (Tashakkori and Teddlie, 1998; Bryman. 2006; Blaikie, 2010). Previous research related to public attitudes and actions towards addressing climate change and community-based sustainability initiatives have principally relied on descriptive survey data, which offer limited insight into the contextual influences on environmental attitudes and behaviour (Warren and McFadyen, 2010). Mixed methods approaches have been successfully applied to research relating to attitudes and behaviours towards household recycling (Barr *et al.*, 2003) and energy conservation (Brandon and Lewis, 1999). It is evident from these studies that adopting a mixed methodology can prove advantageous to harness the strengths of both approaches.

Despite the differences between quantitative and qualitative research, they are not as incompatible as they may seem (Tashakkori and Teddlie, 1998; Thomas, 2003; Creswell and Plano Clark, 2007). The two approaches are good at providing different kinds of information and can be used to complement each other (Johnson and Onwuegbuzie, 2004; Creswell, 2009; Blaikie, 2010). Quantitative research is good at addressing focussed questions concerning correlations or cause-effect relationships between different variables, statistically significant differences between different populations and the prevalence of various factors within a population (Creswell, 2009; Newing, 2011). Qualitative research is good at providing an in-depth understanding of different perspectives, an overview of a situation or issue and disentangling any complexities concerning a situation (Newing, 2011). When well-designed, mixed methods studies can combine the best of both approaches to provide complementary insights into the overall topic of interest (Ivankova *et al.*, 2006; Bryman, 2008; Creswell, 2009; Newing, 2011). The strengths and weaknesses of mixed methods research are illustrated in Table 4.1.

Table 4.1: Strengths and Weaknesses of Mixed Methods Research (Johnson and Onwuegbuzie, 2004).	
Strengths	**Weaknesses**
Words, pictures and narratives can be used to add meaning to numbers	Utilising mixed methods research is more time consuming
Numbers can be used to add precision to words, pictures and narratives	Using both quantitative and qualitative methods and techniques can be costly
Can provide quantitative and qualitative research strengths to minimise weaknesses in mono-method research	Researcher has to learn about multiple methods and approaches and understand how to mix them appropriately
Used to answer a broader and more complex range of research questions because the researcher is not confined to a single method or approach	Can be difficult for a single researcher to carry out both quantitative and qualitative research, especially if the two or more approaches are used concurrently
Researcher can use the strengths of one method to overcome weaknesses in another method by using both in a study	Methodological purists contend that one should work within either a qualitative or quantitative paradigm
Can provide stronger evidence for a conclusion through convergence and corroboration of findings	
Can add insights and understandings that might be missed when mono-method research is used	
Mixed methods research produces more complete knowledge necessary to inform theory and practice	

The combination of quantitative and qualitative data provides a more complete picture by noting trends and generalisations as well as in-depth knowledge of participants' perspectives (Creswell and Plano Clark, 2007).

> "By using a combination of qualitative and quantitative data gathering techniques, investigators can clarify subtleties, cross-validate findings… and evaluate intervention studies" (Black and Ricardo, 1994: 1066).

A need exists when quantitative results are inadequate to provide explanations of outcomes and the problem can be best understood by using qualitative data to enhance the results from quantitative data (Thomas, 2003; Creswell and Plano Clark,

2007). This research employs a triangulation mixed methods approach to the research design. The core premise of triangulation is that all methods have inherent biases and limitations and therefore, the use of one method to assess a phenomenon will inevitably yield biased and limited results (Greene, 2007). When two or more methods converge and corroborate one another then the validity or credibility of the findings is enhanced (Greene, 2007).

4.3. THE PHILOSOPHICAL AND METHODOLOGICAL APPROACH OF THIS STUDY

A pragmatic paradigm is adopted in this study in order to overcome the polarisation of the positivist versus constructivist debate, which utilises a blended approach of deduction and induction as well as quantitative and qualitative research methods; indicative of a pragmatic approach (Cherryholmes, 1992; Tashakkori and Teddlie, 1998; Creswell, 2007; Greene, 2007; Morgan, 2007). Adopting a pragmatic and mixed methodological approach provides this research with both the breadth and depth of data, which is required to understand the nature of addressing climate change at the community level.

Mixed methodological studies combing quantitative and qualitative data provides a more complete picture by noting trends, generalisations and in-depth knowledge of participants' perspectives, as well as providing a better understanding of research problems than either approach alone (Bryman, 2008; Creswell, 2009). It is for this reason why a mixed methodology was chosen to explore the nature of addressing climate change at the community level. Additionally, this study employs a convergent triangulation design to mixed methods research. This research design to mixed methods research allows for the collected, and analysed, data to converge and corroborate one another, which enhances the validity or credibility of the findings. A pragmatic paradigm allows for eclectic approaches to research that are necessary to answer the research questions (Savin-Baden and Howell Major, 2013), and offers a practical and matter-of-fact approach to assessing situations or solving problems. The qualities of blending quantitative and qualitative approaches in a mixed methods study reinforce the justification to adopt a pragmatic paradigm (Section 4.5).

In this study, it is the research questions, rather than the epistemological foundation, that determines the selection of methodologies in keeping with a pragmatic approach (Tashakkori and Teddlie, 1998; Johnson and Onwuegbuzie, 2004). This relationship is illustrated in Figure 4.1, which follows a convergence triangulation design as part of a mixed methods study (Tashakkori and Teddlie, 1998; Creswell and Plano Clark, 2007).

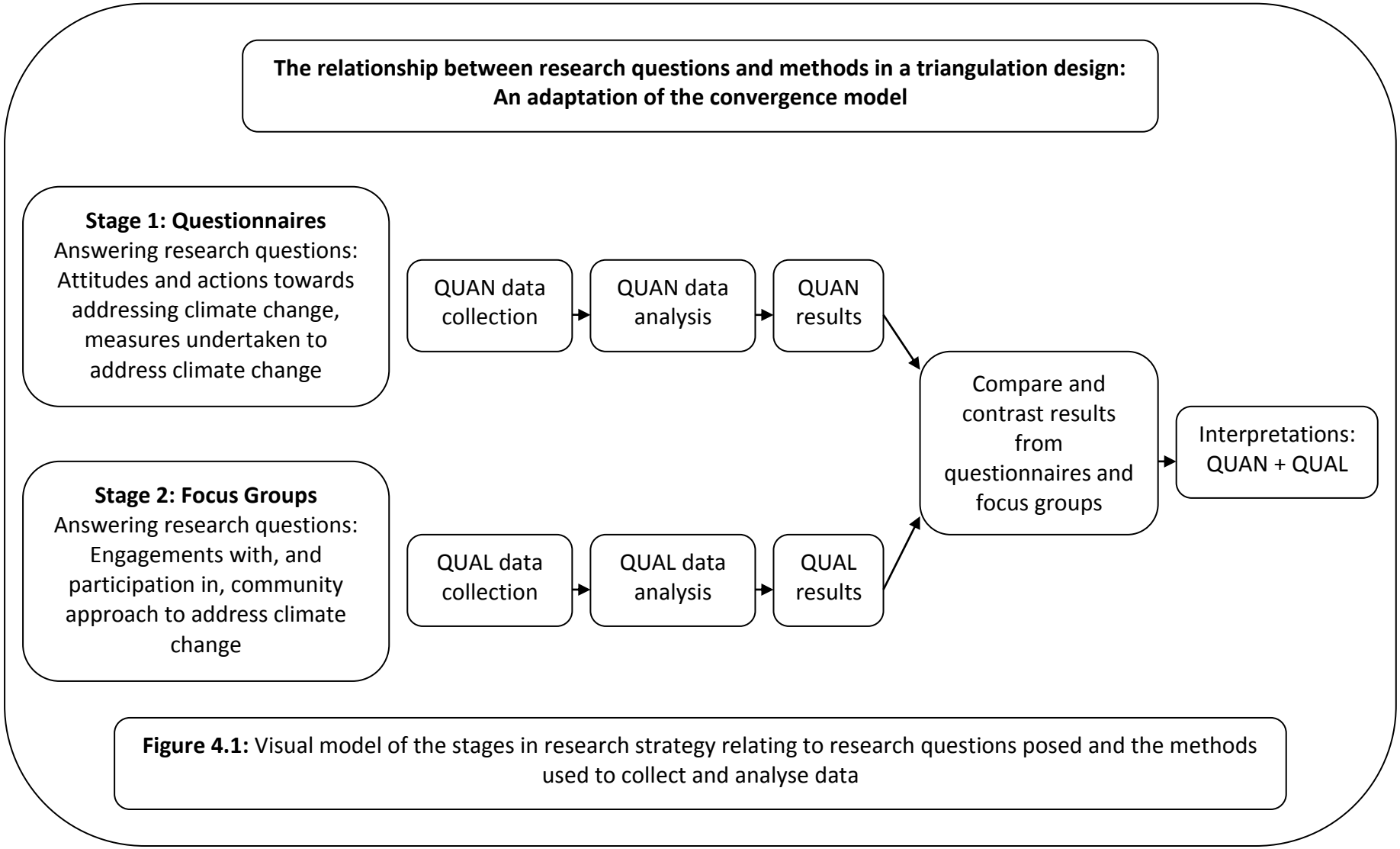


Figure 4.1: Visual model of the stages in research strategy relating to research questions posed and the methods used to collect and analyse data

4.4. ETHICAL CONSIDERATIONS AND RISK ASSESSMENT AND CONTROL

It is important for researchers to acknowledge and anticipate the ethical issues that may arise during a study as research involves collecting data from people, about people (Hay, 2007; Bryman, 2008; Creswell, 2009). Researchers need to protect their research participants, develop a trust with them and promote the integrity of research (Creswell, 2009). Ethical questions are apparent today in such issues as personal disclosure, authenticity, confidentiality and issues of personal privacy through forms of electronic data collection and storage (Bryman, 2008; Creswell, 2009). Researchers need to anticipate and address any ethical dilemmas that may arise during all stages in their research.

Box 4.2: Ethical considerations of this study

An application for ethical review was made in July 2010 with a full outline of the research project: aims and objectives of the study; how participants were selected; approached; the potential risks; and ethical implications of this study. It is important that researchers inform participants of the nature of the study, and the confidential way data will be stored and handled (Landrigde, 2004; Savin-Baden and Howell Major, 2013). Participants were informed, before questionnaires and focus groups were conducted, specifically of the measures in place ensuring confidentiality, anonymity and data storage (Appendix 1). Consent was gathered from questionnaire respondents if they chose to respond to the questionnaire, following information given to the individual about the nature of the study by the researcher. Written consent was obtained before the focus groups commenced. Participants have the right to expect that information they provide will be treated confidentially and, if published, will not be identifiable as theirs (Landridge, 2004). To this end, participants were allocated a number so that they would not be identifiable (Section 4.9.2). Focus group participants identified this to be their preferred method of anonymising their identity.

Participants were informed before questionnaires and focus groups were collected that they had the right to withdraw from the research at any time. Questionnaire respondents were given a slip of paper, with the researchers contact details so that, even retrospectively, after consent was given, they could withdraw from the study if they chose to do so and contact the researcher for further information about the findings of the research. Focus group participants were informed about ethical issues and given an information sheet (Appendix 8), detailing the nature of the study, how data will be stored and the researchers' contact details so that they may withdraw from the study retrospectively, after consent was given, and contact the researcher for further information about the findings of the study.

All studies should consider the risks to the researcher(s) undertaking the study and the participants who will be involved during the research process. It is essential that researchers are aware of the risks that the research they intend to carry out is acknowledged, and protocols are established to minimise any potential risks. Appendix 2 outlines the potential hazards relating to this research and the control measures that are put in place to minimise any potential hazards encountered.

4.5. RESEARCH STRATEGY AND JUSTIFICATION

An illustration of the research strategy in Figure 4.1 outlines the aims of each stage of the research process, and the methods used to collect and analyse data in this study. Consequently, this chapter discusses the stages of the research process and justifies the methods used to collect and analyse data.

In addition to outlining and justifying the adoption of a pragmatic paradigm and use of mixed methods, Section 4.5 justifies the use of questionnaire surveys and focus groups in this study, which are in keeping with the philosophical approach to this research. In this study, questionnaire surveys allowed for 'breadth', whereas focus groups provided 'depth', of understanding towards the research questions.

4.5.1. Justification for employing questionnaire surveys

The first stage of the research comprises a series of questionnaire surveys in three communities. These were conducted in order to explore the attitudes and actions towards addressing climate change, and the acceptability of CBCRS. The goal of survey research is to acquire information about the characteristics, attitudes and behaviours of a population by administering a uniform questionnaire to a sample of individuals (Parfitt, 2005; McLafferty, 2007; Bryman, 2008). The principal attraction of questionnaires has been the ability to produce data that can be analysed by standard procedures, particularly through the use of descriptive and exploratory statistics (Robinson, 1998). Survey research is particularly useful for eliciting public attitudes and perspectives regarding social, economic, political and environmental

issues; and valuable for investigating complex behaviours and social interactions (Parfitt, 2005; McLafferty, 2007).

Parfitt (2005) identifies three categories of survey data resulting from questionnaire surveys: (1) classify people, their circumstances and environment (such as locational variables, age, employment and household size); (2) identify the behaviour of people (such as frequency of visits to a local cinema); and (3) identify attitudes, opinions and beliefs. There are difficulties encountered with eliciting respondents' attitudes, which include patterned responses, insincerity (the tendency of respondents to want to please) and the related issue of attitude forcing. Attitude questions are susceptible to biased responses depending on how they are asked and may be greatly influenced by the nature of the preceding questions (Parfitt, 2005).

Despite the numerous advantages of quantitative survey techniques, there are also limitations to its use. Parfitt (2005) argues that at the most fundamental level researchers employing quantitative techniques must address the twin issues of reliability (can the results be replicated) and validity (does the survey measure what it was intended to). Good survey design is partly achieved by attempting to anticipate and minimise various types of error that may ruin the reliability and validity of a questionnaire survey (Parfitt, 2005; Rice, 2007; Bryman, 2008). Errors in survey research can be subdivided into errors associated with how respondents have been selected i.e. sampling errors, and those errors introduced by questionnaire design i.e. non-sampling errors (Parfitt, 2005; Rice, 2007; Bryman, 2008).

Sometimes questionnaires can constrain the responses that people give. To address this limitation, this study incorporated a diversity of questions (both closed-ended and open-ended) and space for additional comments in the questionnaire survey. Sampling errors such as collecting a small sample could result in a relatively high probability that the sample population will be atypical of the target population with respect to key characteristics (Parfitt, 2005). Operator bias such as inadvertently selecting individuals of a certain age or gender may over-represent those groups in the sample. The researcher chose a systematic sampling strategy (every fifth

household) to reduce this bias. These chance differences (between the sample and the population from which it has been derived) will be greater for a smaller sample than for a larger one.

Non-sampling errors can be associated with distortions introduced in the process of interviewing (response error) and errors that arise through biases in who did and did not respond (non-response error) (Robinson, 1998; Parfitt, 2005; Bryman, 2005). The process whereby ideas are exchanged and recorded during interviewing is subject to error. For example, the questions asked may not be understood in the way intended or the respondent may feel pressured into agreeing with the researcher's own ideas (Robinson, 1998; Parfitt, 2005). Addressing these limitations, face-to-face administration of the questionnaires was undertaken whereby the interviewer can guide the respondent and explain terms more appropriately (McLafferty, 2007). This method of administration provides better response rates than self-administered, postal and electronic survey administration (McLafferty, 2007; Newing, 2011). When respondents are ambiguous, there is a tendency (albeit unintentional) to fit unclear responses into ones consistent with opinions expressed earlier during a questionnaire or interview (Parfitt, 2005). These 'expectational errors' can lead to the researcher seeking information that conforms with key theories under investigation rather than that which contradicts (Parfitt, 2005). This is part of the great temptation to equate the quality of research with whether or not something conclusive was found.

4.5.2. Justification for employing focus groups

The second stage of the research comprises a series of focus groups. These were conducted to explore the dimensions of engagements with, and participation in, CBCRS. Focus groups have been regarded as useful particularly in studying the dynamics of emotions and perceptions towards global issues such as climate change, and people's participatory experiences and interactions with environmental projects (Darier and Schule, 1999; Longhurst, 2003; Conradson, 2005; Mannarini and Fedi, 2009). They have also been employed to explore the complex understandings and interactions that people have with their everyday environments (Conradson, 2005).

Discussed in Chapter 2, there is a significant gap in academic literature relating to qualitative studies exploring engagements with, and participation in, CBCRS (Darier and Schule, 1999; Mannarini and Fedi, 2009). Therefore, investigating the motivations, expectations, experiences, beliefs and feelings of citizens involved in participatory approaches such as CBCRS in addressing climate change, this research begins to address this gap in academic literature.

Qualitative research is appropriate for exploring the range of complex emotions, understandings, beliefs, actions and a diversity of experiences that exist with respect to a specific issue (Longhurst, 2003; Consradson, 2005). Qualitative findings can give indications of what is likely to be acceptable to citizens and more importantly why or why not (Darier and Schule, 1999). Focus groups explore perceptions and actions towards addressing climate change and community responses in a dynamic, social context (Stoll-Kleemann *et al.*, 2001; Bryman, 2008). Focus groups provide insights into why certain relationships, do or do not, emerge in the quantitative stage and subsequently they perform an explanatory function (Creswell, 2003). Focus groups allow participants to express their beliefs, feelings and behaviours in their own words and expose how individuals construct climate change and community responses by drawing on different forms of knowledge, values and experiences (Kempton, 1991; Wisker, 2001; Conradson, 2005). Therefore, focus groups are an ideal methodology to explore these engagements and public participation in CBCRS, and address the gap in academic literature. The material generated in this way is rich, detailed and mutli-layered, producing a deeper picture than quantitative methods (Valentine, 2005; Bryman, 2008).

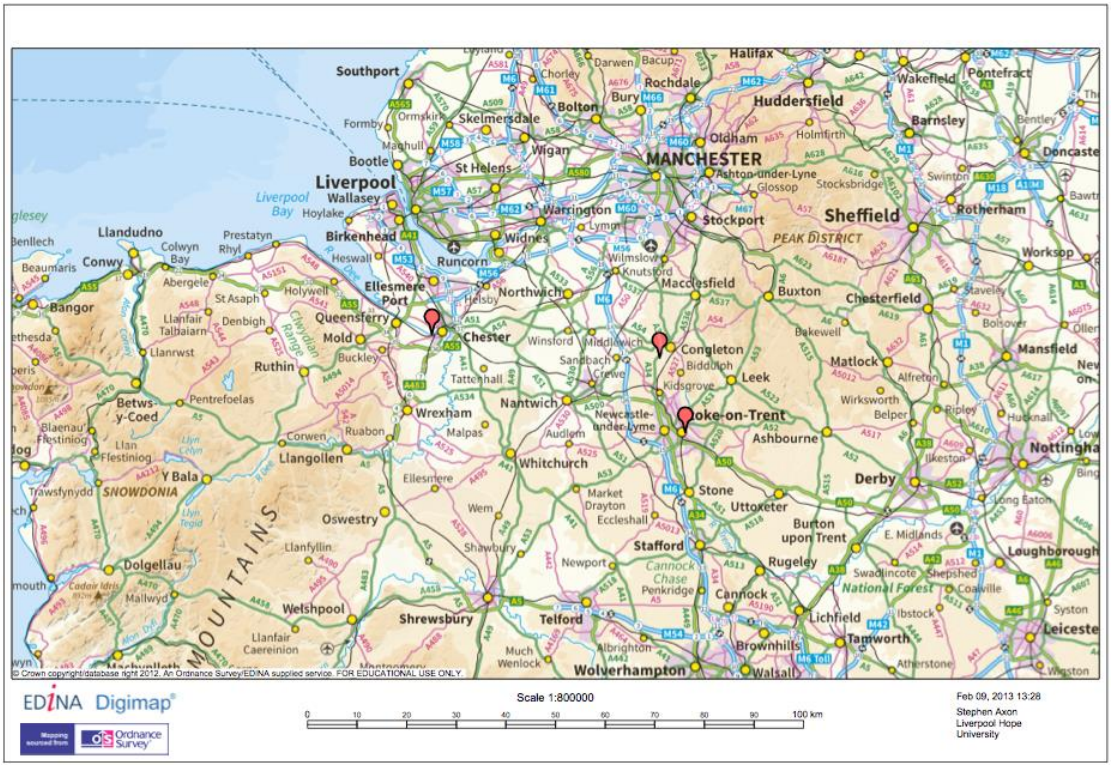
For this research, these points are an important component to explore public engagements with, and participation in, CBCRS. Focus groups offer a way of observing individual views as they emerge within a social context that enables the researcher to develop an understanding of the debates which occur around, and between, individual attitudes and positions (Conradson, 2005). This method offers researchers an insight into what people think, feel and do (Longhurst, 2003;

Conradson, 2005). This is integral for understanding the nature of engagements with addressing climate change at the community level.

The use of qualitative methods in this study, focus groups, further reinforces the justification of the adoption of a pragmatic paradigm (Section 4.3), where knowledge is derived from observation of interaction among a group of individuals in their environment (Savin-Baden and Howell Major, 2013).

4.6. SELECTING SUITABLE COMMUNITIES FOR DATA COLLECTION

Selecting suitable communities for data collection was biased towards initiatives targeting households, however the programmes selected include a community-based focus, which included a broad agenda to encourage sustainable lifestyles. Two CBCRS (Congleton Sustainability Group and Sustainable Blacon) and a community without a CBCRS (Northwood in Stoke-on-Trent) were selected to gather information into the types of programmes being delivered which address climate change at the community level, their aims and approaches, the organisations involved and the types of techniques applied to assist in a transition towards sustainable lifestyles. Congleton Sustainability Group and Sustainable Blacon are located in the North West of England, and Northwood in the West Midlands (Figure 4.2). Both regions have established practices of launching CBCRS (Alexander *et al.*, 2007; Charnock, 2007; Heiskanen *et al.*, 2010; Middlemiss and Parrish, 2010).


Southport
Liverpool
Bootle
Wallasey
Birkenhead
Llandudno
Conwy
Bangor
Prestatyn
Rhyl
Abergele
St Asaph
Holywell
Ellesmere Port
Queensferry
Chester
Mold
Ruthin
Denbigh
Llanrwst
Betws-y-Coed
Pentrefoelas
Wrexham
Corwen
Llangollen
Ruabon
Y Bala
SNOWDONIA
Oswestry
Llanfyllin
Dolgellau
Welshpool
Shrewsbury
Telford
Wolverhampton
Runcorn
Widnes
Warrington
Northwich
Winsford
Middlewich
Nantwich
Whitchurch
Ellesmere
Wem
Shawbury
Newport
Stafford
Stone
Uttoxeter
Derby
Burton upon Trent
Rugeley
Cannock
Lichfield
Tamworth
Brownhills
Walsall
Albrighton
Much Wenlock
Market Drayton
Eccleshall
Penkridge
Cannock Chase
Newcastle-under-Lyme
Congleton
Biddulph
Leek
Kidsgrove
Sandbach
Crewe
Macclesfield
Buxton
Ashbourne
Matlock
Bakewell
Chesterfield
Alfreton
Wirksworth
Belper
Ripley
Ilkeston
Nottingham
Mansfield
Worksop
Rotherham
Sheffield
PEAK DISTRICT
Stocksbridge
Swinton
Doncaster
Barnsley
Wakefield
Pontefract
Huddersfield
Holmfirth
Rochdale
Bury
Bolton
Oldham
MANCHESTER
Ashton-under-Lyne
Glossop
Stockport
Wigan
St Helens
Skelmersdale
Southport
Chorley
Darwen
Halifax
Bacup
Lymm
Tattenhall
Malpas
Audlem
Whitchurch
Swadlincote
Shepshed
Coalville
Ibstock
Leicester
Loughborough
Long Eaton
Ilkeston
Atherstone
Nuneaton
Burton upon Trent
E. Midlands
National Forest
Cannock Chase
Penkridge
Much Wenlock
Albrighton
Wolverhampton
Walsall
Brownhills
Tamworth
Lichfield
Cannock
Rugeley
Stafford
Newport
Shawbury
Wem
Ellesmere
Whitchurch
Nantwich
Wrexham
Malpas
Audlem

comparison between census data and the socio-demographic values of respondents, questionnaires were collected within the ward boundaries.

4.6.1. Data Collection Location 1: Sustainable Blacon, Chester

Located 1 mile north-west of Chester, the community of Blacon aims to generate a model sustainable community. Sustainable Blacon was established in 2009 with an aim to improve the local environment and through energy saving measures reduce residents' energy bills. To meet this objective of becoming a model sustainable community, the project has identified four areas that will support the development of a sustainable community in Blacon (Sustainable Blacon, n.d.). These four areas include open spaces; transport; energy; and social enterprises, which include encouraging cycling, regeneration of green spaces, contributing to a sustainable transport infrastructure in the community and working to increase local engagement with environmental issues. Energy efficiency improvements in three CDHT tower blocks in Blacon are also taking place (Sustainable Blacon, n.d.). The Sustainable Blacon project is seeking to improve quality of life and the environment in Blacon, and support other communities to address climate change for a more sustainable future.

Sustainable Blacon is based on the regeneration work in Blacon since 1999 and the successful approaches the community has developed in working with organisations to improve quality of life (Sustainable Blacon, n.d.). The project was established by Blacon Community Trust to advance plans for a secure, sustainable future for Blacon. The project coordinators are local residents, representatives from CDHT, Chester West and Chester Council and expert advisors from energy, green spaces and urban design backgrounds. The Sustainable Blacon project is attempting to decrease the carbon footprint of the area and increase overall sustainability (Climate Change Northwest, 2009). Sustainable Blacon, like the AHGCNP is a community-led initiative and is within the early stages of its approach towards achieving sustainability and addressing climate change. The study area is highlighted in Figure 4.3.

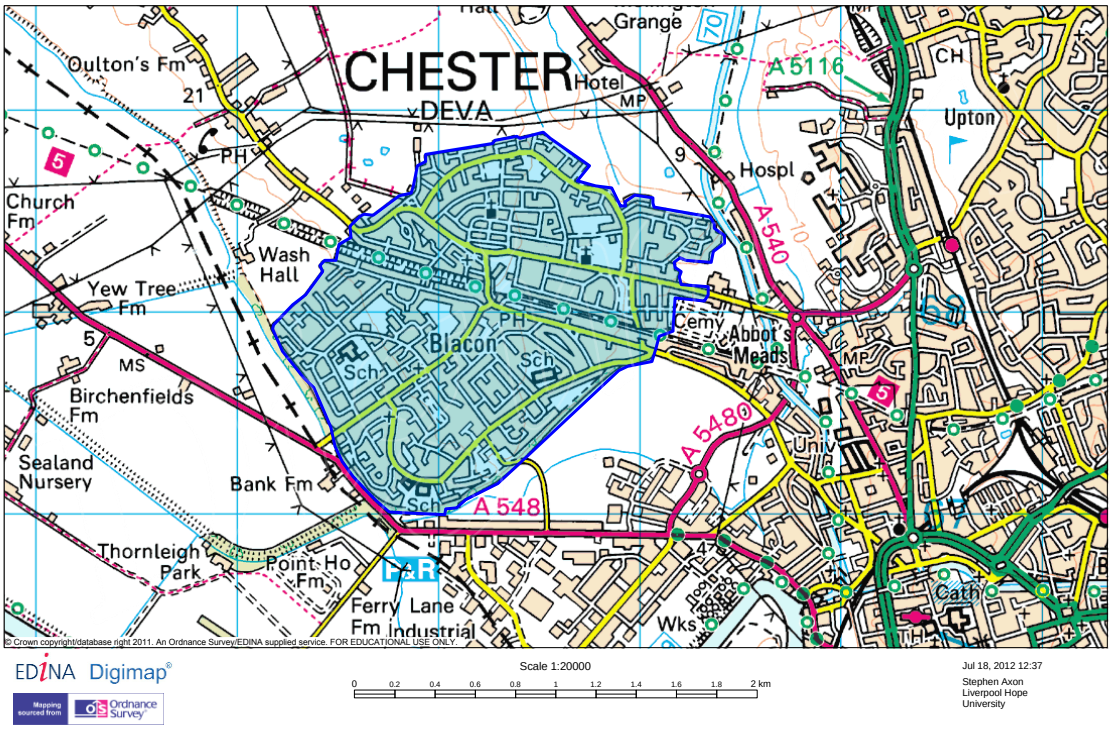


Figure 4.3: Location of Blacon highlighting data collection (©Crown copyright/database right 2008, An Ordnance Survey/EDINA supplied service, 2012).

Data was collected in, the ward boundaries of, Blacon in July 2011 over a period of ten days (including weekends) so that those working full time would not be disproportionately represented. The researcher (and one assistant) started interviewing respondents on Blacon Avenue, utilising a systematic sampling strategy (every fifth household).

4.6.2. Data Collection Location 2: Congleton Sustainability Group, Congleton

Congleton Sustainability Group was formed in June 2009, under the auspices of Congleton Town Council, to bring together several sustainability initiatives with a vision of becoming a Transition Town in 2010. Congleton Sustainability Group is comprised of several community groups pursuing environmental agendas and earned the right for Congleton to become a Transition Town in 2010 (Transition Network, 2012b).

Transition Towns (also known as the Transition Network) is a grassroots network of communities seeking to build resilience against the impacts of climate change and

peak oil (Hopkins, 2010). The Transition Network aims to inspire, encourage, connect, support and train communities as they reduce carbon emissions (Transition Network, 2012a). The aim of Transition Towns is to raise awareness of sustainable living, reduce energy usage as well as reducing reliance on fossil fuels and the supply chains that are dependent on fossil fuels (Hopkins and Lipman, 2009; Hopkins, 2010). The key concept within Transition Towns is the notion of Energy Descent Action Plans that are visioned, designed and implemented by the community to proactively reduce the reliance on fossil fuels (Hopkins and Lipman, 2009; Hopkins, 2010). Located 1 mile west of Congleton town centre, the village of West Heath provides the context for this research to be undertaken (Figure 4.4).

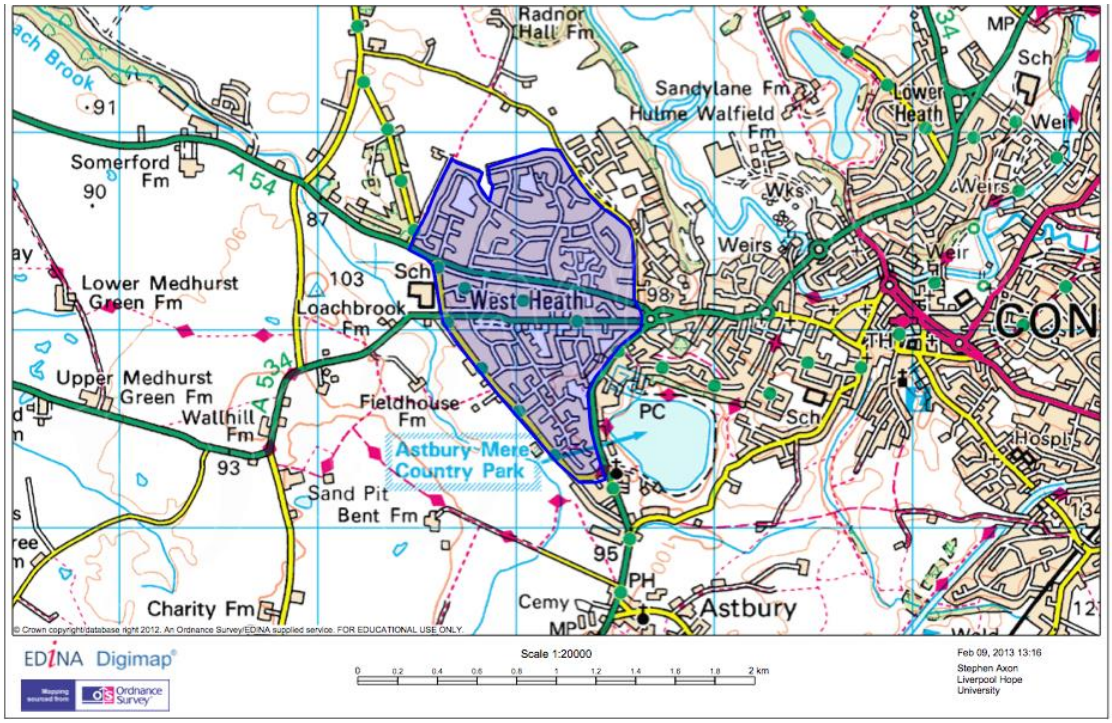


Figure 4.4: Location of Congleton highlighting data collection (©Crown copyright/database right 2008, An Ordnance Survey/EDINA supplied service, 2012).

Data was collected in, the ward boundaries of, West Heath in September 2011 over a period of ten days (including weekends) so that those working full time would not be disproportionately represented. The researcher (and one assistant) started interviewing respondents on Back Lane, utilising a systematic sampling strategy (every fifth household).

4.6.3. Data Collection Location 3: Northwood, Stoke-on-Trent

The choice of two CBCRS, Sustainable Blacon and Congleton Sustainability Group, allowed for comparisons of attitudes, actions and participation between the two areas. However, a control sample was also required. Located 1 mile east of Hanley (town centre in Stoke-on-Trent) lies the suburban area of Northwood (and Birches Head). The local authority, Stoke-on-Trent, has a strong record of implementing environmental policies related to fuel poverty and improving environmental quality. This area forms the third data collection location along with Sustainable Blacon and Congleton Sustainability Group. The area where data was collected is highlighted in Figure 4.5.

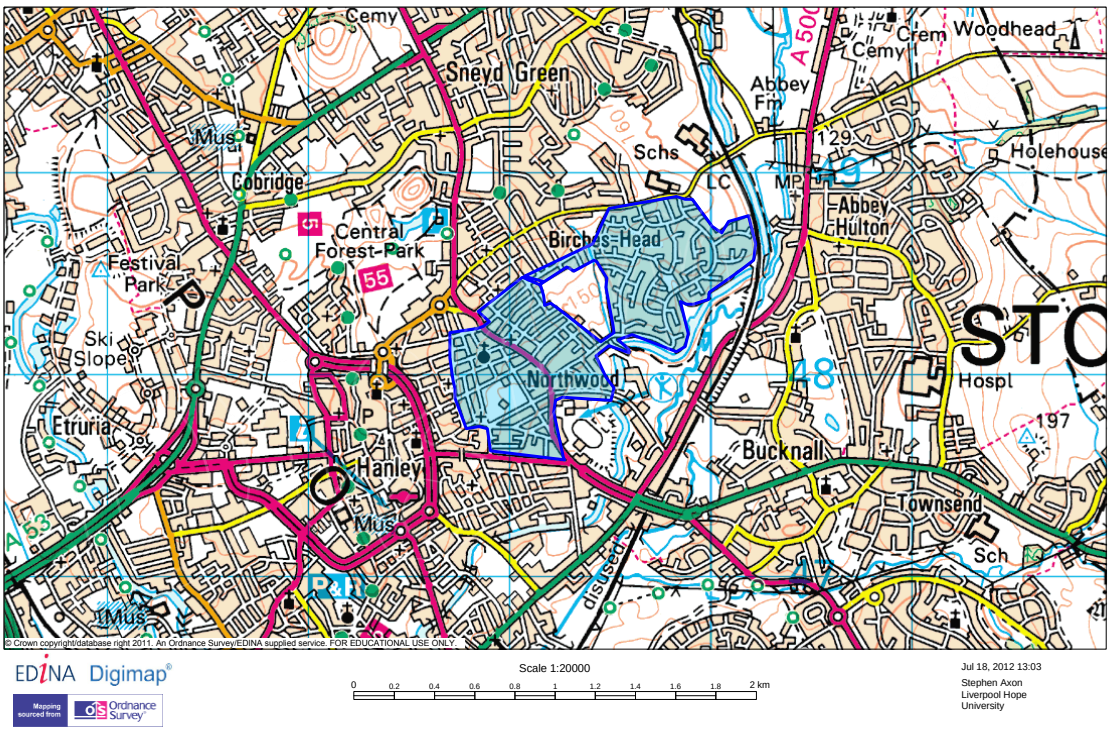


Figure 4.5: Location of Northwood highlighting where data collection (©Crown copyright/database right 2008, An Ordnance Survey/EDINA supplied service, 2012).

Data was collected in, the ward boundaries of, Northwood and Birches Head in December 2011 over a period of ten days (including weekends) so that those working full time would not be disproportionately represented. The researcher (and one assistant) started interviewing respondents on Janet Place, utilising a systematic

sampling strategy (every fifth household).

4.7. STAGE 1: DESIGNING AND CONDUCTING QUESTIONNAIRE SURVEYS

The first stage of the research process comprises conducting questionnaire surveys in the three communities highlighted in Section 4.6. The purpose of these surveys was to explore attitudes and actions towards addressing climate change and the acceptability of CBCRS.

4.7.1. Consideration of Questionnaire Design

Questionnaires must be custom-built to address the aims of the research project (Robinson, 1998; McLafferty, 2007). It is important to consider the design of the questionnaire in-depth to elicit information that is correct and possesses the desired amount of detail (Oppenheim, 1996 in Robinson, 1998; McLafferty, 2007). The design of a questionnaire can be pivotal in any research project as quality of data produced ultimately depends upon the design (Robinson, 1998). Consequently, questionnaire design focuses on questionnaire content, wording and format (Robinson, 1998; Parfitt, 2005), and was contemplated in-depth to reduce bias and address issues relating to reliability and validity.

The content of the questionnaire needs to be firmly situated in the research questions under investigation. All questions included in the questionnaire must be needed and not included because 'they might be useful' (Parfitt, 2005). Additionally, what to include is also a function of what questionnaire length can be sustained for a given research topic (Parfitt, 2005). A reduction in data quality or 'fatigue' bias could result if the length of the questionnaire is excessive and the topic less engaging (Parfitt, 2005; McLafferty, 2007). The questionnaire content must measure what is practicable and relevant to respondents, and to give them the maximum opportunity to respond. The questionnaire survey developed for this study has addressed these issues. All questions posed to respondents were relevant for the purposes of this research and fully justified (Appendix 4), and provide adequate opportunity to respond to the content.

Successful questionnaire design has much to do with the ability of the researcher to empathise with the prospective respondent however, the language and tone of the questions must not put the respondent out of their depth (Robinson, 1998; Parfitt, 2005). Conversely, oversimplified language will put the respondents off completing the questionnaire. Surveys should keep related subjects in a block with riskier questions kept towards the end of the questionnaire to minimise information lost should the respondent refuse to continue. Other errors of questionnaire design include double-barrelled questions, negative and double negatives, potentially embarrassing questions, leading or loaded questions, inconsistency and suggestion (Parfitt, 2005).

Questions must be clear and understandable to the people from whom information is collected (Robinson, 1998). This clarity rests on four points: (1) simple language, (2) common concepts, (3) manageable tasks and (4) widespread information. The questionnaire survey developed for this study follows the cornerstones of effective questionnaire design, demonstrated by Robinson (1998). For this study, questions were presented in a simple manner without using technical vocabulary for ease of understanding. Pilot studies provide numerous advantages for researchers such as providing a small dataset for use in preparing provisional coding for analysis as well as checking on elements of replicability (Robinson, 1998).

4.7.1.1. Measuring attitudes and behaviour

Measuring concepts such as attitudes, beliefs, values and opinions are not straightforward and are difficult to measure, as they are multi-faceted and not readily amenable to investigation via a simple and single question (Oppenheim, 1992 in Parfitt, 2005). Employing a scaling approach utilising measurement via a type of abstraction can be utilised in place of a single question to explore attitudes and behaviour (Robinson, 1998). Attitude data are of interest to researchers because of their potential to predict how people might behave in the future (Ajzen, 1991). However, attitudes are by their nature prone to fluctuate and can endure for a limited time or last a whole lifetime (Parfitt, 2005). External influences may intervene to modify any attitudes measured by a questionnaire and a proportion of

respondents may not behave as expected and may not be a reliable measure of behaviour due to interviewer bias and prestige bias (Robinson, 1998; Parfitt, 2005; POST, 2010).

Attitudes are recorded using a Likert-style format in which statements are provided and respondents are asked to indicate the extent to which we 'agree' or 'disagree' using a scale with five or seven positions (Robinson, 1998; Parfitt, 2005; McLafferty, 2007; Bryman, 2008). Utilising attitudinal scales the researcher assumes that the respondent actually has an attitude towards the issue. The use of an 'attitude battery' in which a single topic is explored through different statements allows the individual measures to be combined into an aggregate measure (Parfitt, 2005). The TPB can be used as a model to gauge attitudes and actions towards addressing climate change and CBCRS, and was adapted to measure attitudes and behaviour towards reducing household carbon emissions.

4.7.2. Designing the questionnaire

The questionnaire was developed to accommodate the different types of communities identified for this study being surveyed: communities with, and without, a CBCRS in operation. A well-considered questionnaire is one that utilises a multitude of different open and closed question types (Robinson, 1998). Asking closed questions present a selection of pre-coded responses, which may force respondents into adopting false positions, and strongly predetermine the results (Robinson, 1998; Parfitt, 2005). Closed questions also encompass question types such as Likert scales and ranking questions. Open questions direct the respondent in more focused ways and do not force respondents into giving particular answers; instead comments are later read through and coded based on frequent responses (Parfitt, 2005; McLafferty, 2007).

The questionnaire was presented with a structured and systematic approach and utilised both open and closed questions and had five sections: (1) awareness, perceptions and understanding of climate change and carbon reduction; (2) attitudes towards climate change and carbon reduction; (3) CBCRS; (4) attitudes towards life

and environmental issues; and (5) socio-demographic variables. The majority of questions asked were open questions, designed to give respondents the opportunity to voice their opinions. Personal questions were kept to a minimum and were left to the end of the questionnaire. Table A4.1 (Appendix 4) presents the structure of the questions and a justification for the questions included within the questionnaire.

4.7.3. Pilot Study and Questionnaire Development

Once a questionnaire has been formulated it should always be tested. Pilot surveys and pre-testing are important parts of any successful implementation of questionnaires (Robinson, 1998; Parfitt, 2005). The purpose of piloting a questionnaire is to test the questions posed and testing the questionnaire itself, which involves checking the length of the survey, the interest and attention of respondents and the flow of the questionnaire (Robinson, 1998; Parfitt, 2005; Newing, 2011). Following this stage, the researcher can change any weaknesses that were highlighted during the testing of the questionnaire. The importance of piloting should not be overemphasised, and the questionnaire should be administered in the same way as the final study (Newing, 2011).

Testing the questionnaire and observing respondents reactions to questions provide an insight as to whether any questions need to be re-drafted (Newing, 2011). Robinson (1998) states that when evaluating a pilot survey with an aim to improving the design of a questionnaire, six points can be considered: (1) Did any of the questions appear to make the respondents uncomfortable?; (2) Did any of the questions have to be repeated?; (3) Did the respondents misinterpret any questions?; (4) Which questions were the most difficult or awkward to read?; (5) Are there any sections that "drag" or other time related problems?; and (6) Are there any sections where the respondents would have liked the opportunity to say more?

Box 4.3: Testing the questionnaire and pilot study

A test of the questionnaire was undertaken with a group of employees and students at Liverpool Hope University during May and June 2011 before the pilot test. The questionnaire was refined during this stage to improve the phrasing of some

questions. During this stage of testing the questionnaire, a definition of a CBCRS was included.

The pilot study was undertaken in Blacon, a CBCRS, in Chester during July 2011 (using a systematic sampling strategy: every fifth household). A total of 50 questionnaires were collected (face-to-face) and evaluated following the method of Robinson (1998). In this evaluation, no questions appeared to make the respondent uncomfortable or needed to be repeated and no questions were misinterpreted. The benefit of conducting questionnaires face-to-face is that the interviewer can guide the respondent through the questionnaire eliminating difficulty in respondents reading the questionnaire themselves (McLafferty, 2007; Newing, 2011).

One negative element associated with the questionnaire is its length and the time taken to respond. Fatigue bias may result if the length of the questionnaire is excessive, however, the interviewer observed that respondents were happy to continue answering the questionnaire providing detailed answers. In the final stage of the evaluation, respondents are provided an opportunity to add any additional thoughts or observations on the topic of addressing climate change at the community level in Q35.

Based on the results from the pilot study, it may be desirable to reflect on the questions asked and change the way questions are worded or remove them from the questionnaire entirely (McLafferty, 2007; Newing, 2011). Although the time and effort taken for respondents to answer the questionnaire would have been greater than for a conventional checklist questionnaire, this does not appear to have adversely affected the survey response rate, it's representativeness or the quality or the responses given. No alterations were made following the evaluation of the pilot questionnaire. Due to the high quality of data generated by the pilot questionnaire, surveying in Blacon continued and the pilot study questionnaires were incorporated into the main study.

4.7.3.1. Developing reliability and validity

Field (2009) states that in order to ensure the reliability and validity of the questionnaire, reliability analysis should be undertaken. Reliability, in this sense, indicates that a measure should consistently reflect the construct it is measuring (Santos, 1999; Gliem and Gliem, 2003; Field, 2009). Cronbach's Alpha is used to statistically test for consistency and reliability (Gliem and Gliem, 2003; McKillup, 2012), and provides a measure of the internal consistency of a test or scale (Tavakol

and Dennick, 2011). The Cronbach Alpha is used to measure the reliability with respect to the questions measuring the different elements that comprise the TPB, adapted to measure carbon reduction behaviour.

Appendix 6 illustrates the results of the Cronbach's Alpha statistical test of reliability for the results of the adapted TPB framework used in the questionnaire. It is evident that all scales included in the pilot questionnaire had very high reliabilities (TPBAttitude: .980; TPBSocialNorm: .955; TPBPBC: .945; TPBIntention: .993; and TPBPastBehaviour: .968). Field (2009) argues that any items that with values in the column labelled *Cronbach's Alpha if item is deleted* that are substantially higher than the overall Alpha may need to be deleted to improve its reliability. Overall, there were four questions within the series of subscales identified in Appendix 6 that would have marginally increased the overall Cronbach's Alpha for that question. The removal of these questions to increase the Alpha score is negligible and would not have substantially affected reliability if they were deleted and both values reflect a very good degree of reliability (Field, 2009).

4.7.4. Main addressing climate change questionnaire survey

4.7.4.1. Sampling procedures

Sampling is the acquisition of information about a relatively small part of a larger group or population, usually with the aim of making inferential generalisations about the population to obtain a 'representative characterisation' (McLafferty, 2007; Rice, 2007; Bryman, 2008). Samples are only as valuable as they are representative and errors in sampling leads to imprecision, which makes inferences meaningless (Parfitt, 2005; Rice, 2007; Bryman, 2008). The principal aim of most geographical research focuses on the general rather than the unique, and in turn requires some form of sampling to make useful generalisations (Rice, 2007).

There can be differences between sample estimates and the true population value which is referred to as the accuracy of the sample (Rice, 2007). Accuracy is defined by its two components: bias and precision. Precision consists of the number of

observations/respondents that comprise a sample, the heterogeneity (variability) of the characteristic of interest within a population and non-systematic errors that arise from technical limitations of the measuring procedure i.e. the people and instruments involved (Rice, 2007). The larger the sample size and lower population heterogeneity, the more precise sample estimates will be. Bias refers to the systematic deviation of the sample statistics from the true value and minimising bias ensures the representativeness of a sample (Parfitt, 2005; Rice, 2007). Lack of bias is achieved by sampling randomly from a population. Minimising sampling and non-sampling errors helps to reduce bias and maximise precision (Parfitt, 2005; Rice, 2007; Bryman, 2008).

A variety of sampling methods are used by Geographers, and fall into two basic groups: probability and non-probability sampling (Parfitt, 2005; Rice, 2007; Bryman, 2008; Newing, 2011). Non-probability sampling strategies do not use a random selection method, instead the selection of sample numbers is dependent on human judgement, which implies that some units of the population are more likely to be selected then others (Parfitt, 2005; Bryman, 2008), and can not be used to make statistical inferences about the population from which they are drawn (Rice, 2007). Probability sampling strategy involves a sample that has been selected using random selection so that each member of the target population has a known (and non-zero) chance of being selected (Parfitt, 2005; Rice, 2007; Bryman, 2008). A representative sample is more likely to result when this method of selection from the population is employed (Bryman, 2008).

Systematic sampling is commonly used in survey research because it offers a more uniform coverage of the population over a simple random sampling strategy (Robinson, 1998). Systematic sampling obviates the need to assign numbers to the unit of study and undergo a random selection process (Bryman, 2008). Consequently, employing a systematic sampling strategy provides a high degree of reliability and external validity. Systematic sampling was employed in all three locations for data collection, choosing every fifth household as the sample interval.

4.7.4.2. Socio-demographic profile of respondents

A total of 619 residents were surveyed by questionnaire: Blacon (*n*=217; response rate: 40.3%), Congleton (*n*=196; response rate: 44.3%) and Northwood (*n*=206; response rate: 52.0%), and were surveyed in July 2011, September 2011 and December 2011 respectively. These response rates are comparable to other studies with similar research aims (Whitmarsh, 2009a).

Comparison of the survey responses to recent census data for each electoral ward where respondents were surveyed indicates, that in terms of socio-demographic values, the survey sample reflects the profile of the selected ward populations. In total, males comprised 51.9% (*n*=321) of the survey sample and females 48.1% (*n*=298). Overall, the majority of respondents were within the age categories of 26-35 (*n*=125, 20.1%), 36-45 (*n*=144, 23.2%) and 46-55 (*n*=132, 21.1%). The mean age of the survey sample is 42.55 years, with a mode of 41.51 years. Compared to recent census data for each ward, these results indicate that the survey sample reflects the age profile of the total ward population.

There are some notable differences between the survey sample and the profile of the selected ward populations. Overall, the survey sample is more educated than the total ward populations. For example, in Blacon 17.9% (*n*=39) are qualified to degree level or above but in the most recent census data, only 9.7% are educated above degree level. Conversely, in Northwood there are a lower number of respondents who are educated to degree level and above, 8.2% in comparison to 10.3% in the most recent census. It should be acknowledged also that the survey sample is more qualified with respect to their Level 3 qualifications (Further Education/College Level). 32.2% of respondents in Blacon, 30.1% and 37.7% of respondents in Congleton and Northwood stated that they had attained Level 3 qualifications.

Comparisons between the survey sample and recent census data for the total ward populations indicate that employment levels in all three communities reflects the profile of the larger population from the selected wards. However, there are some differences that should be acknowledged. In comparison to census data, the number

of people with full time employment is marginally lower, and the number of people in part time employment is marginally higher. It should be acknowledged that at the time of survey, the UK Coalition Government was making significant budget cuts, which resulted in significant job losses and unemployment. Consequently, unemployment levels are significantly higher in comparison to census data.

The socio-demographic profile of each community sampled and the overall survey sample is illustrated in Table 4.2.

Table 4.2: Socio-demographic profile of survey respondents in each community and overall.

Gender	**Blacon**	**Congleton**	**Northwood**	**Total**
Males	107 (49.3%)	104 (53.1%)	110 (53.4%)	321 (51.9%)
Females	110 (50.7%)	92 (46.9%)	96 (46.6%)	298 (48.1%)
Total	*n*=217 (100%)	*n*=196 (100%)	*n*=206 (100%)	*n*=619 (100%)
Age Range	**Blacon**	**Congleton**	**Northwood**	**Total**
18-25	20 (9.2%)	21 (10.7%)	34 (16.5%)	75 (12.1%)
26-35	53 (24.4%)	33 (16.8%)	39 (18.9%)	125 (20.1%)
36-45	49 (22.6%)	52 (26.6%)	43 (20.9%)	144 (23.2%)
46-55	48 (22.1%)	33 (16.8%)	51 (24.8%)	132 (21.1%)
56-65	29 (13.4%)	36 (18.4%)	26 (12.6%)	91 (14.5%)
Over 66	18 (8.3%)	21 (10.7%)	13 (6.3%)	56 (9%)
Total	*n*=217 (100%)	*n*=196 (100%)	*n*=206 (100%)	*n*=619 (100%)
Mean	44.09 years	45.58 years	42.68 years	42.55 years
Mode	34.02 years	40.5 years	47.84 years	41.51 years
Education Level	**Blacon**	**Congleton**	**Northwood**	**Total**
Higher Education: Postgraduate	5 (2.3%)	5 (2.6%)	5 (2.4%)	15 (2.4%)
Higher Education: Undergraduate	35 (16.1%)	32 (16.3%)	22 (10.7%)	89 (14.4%)
Further Education (College)	70 (32.3%)	73 (37.2%)	77 (37.4%)	220 (35.5%)
Secondary	75 (34.6%)	62 (31.6%)	72 (35%)	209 (33.8%)
Primary	32 (14.7%)	24 (12.2%)	30 (14.6%)	86 (13.9%)
Total	*n*=217 (100%)	*n*=196 (100%)	*n*=206 (100%)	*n*=619 (100%)

Employment Level	**Blacon**	**Congleton**	**Northwood**	**Total**
Full time employed	84 (38.7%)	73 (37.2%)	74 (35.9%)	231 (37.3%)
Part time employed	41 (18.9%)	44 (22.4%)	46 (22.3%)	131 (21.2%)
Retired	29 (13.4%)	29 (14.8%)	21 (10.2%)	79 (12.8%)
Student	9 (4.1%)	15 (7.7%)	14 (6.8%)	38 (6.1%)
Unemployed	34 (15.7%)	16 (8.2%)	35 (17%)	85 (13.7%)
Other	20 (9.2%)	19 (9.7%)	16 (7.8%)	55 (8.9%)
Total	*n*=217 (100%)	*n*=196 (100%)	*n*=206 (100%)	*n*=619 (100%)
Additional values	**Blacon**	**Congleton**	**Northwood**	**Total**
Membership of environmental groups	33 (15.2%)	28 (14.3%)	25 (12.1%)	86 (13.9%)
Readership of books related to the environment	56 (25.8%)	62 (31.6%)	65 (31.6%)	183 (29.6%)
Viewership of programmes related to the environment	64 (29.5%)	73 (37.2%)	81 (39.3%)	218 (35.2%)

4.7.4.3. Ensuring reliability and validity

To ensure reliability and validity with respect to the data collected using an adapted TPB framework for carbon reduction behaviour, Cronbach's Alpha was again used to test the reliability of these Likert scales. Appendix 7 illustrates the results the Cronbach's Alpha statistical test of reliability for the results of the adapted TPB framework used for the main climate change study. It is evident that all the scales included in the questionnaire have very high reliabilities (TPBAttitude: .986; TPBSocialNorm: .973; TPBPBC: .978; TPBIntention: .992; and TPBPastBehaviour: .982). In comparison to the Cronbach's Alpha observed in Appendix 6, all Alpha tests have an increased score of reliability. Illustrated in Appendix 7, no deletion of questions would raise the reliability of the overall Alphas. This demonstrates that the adapted TPB framework measuring carbon reduction behaviour is a reliable tool for exploring the dimensions that influence such actions. These results indicate that the subscales measuring the components of the adapted TPB have a very high degree of internal consistency and accurately measure carbon reduction actions.

4.8. STAGE 2: DESIGNING AND CONDUCTING FOCUS GROUPS

The second stage of this research comprises a series of focus groups which further explore acceptability of community level responses to address climate change; understandings of the relationship between sustainable, low-carbon living and community-based solutions; and the dimensions of engagements with, and participation in, CBCRS.

4.8.1. Applying Focus Groups

Compared with quantitative data collection, Darier and Schule (1999) comment that qualitative research seems a messier process that produces fuzzier results. This is in part because qualitative research can enable the participants to contribute to the definition of the research categories themselves, and in following this route, researchers might get closer to the participants' ways of thinking (Darier and Schule, 1999; Bryman, 2008). The strength of focus groups is in providing background information and context relating to "the experiences, observations and opinions of group members" (Massey, 2011: 7), generating ideas and in-depth information on each participant's perspectives and motivations (Newing, 2011).

A focus group consists of a group of people, usually between 4 and 10, who meet in an informal setting to talk about a particular topic set by the researcher (Longhurst, 2003; Conradson, 2005; Newing, 2011). The facilitator keeps the group on topic but is otherwise non-directive, allowing the group to explore the subject from as many angles as they please (Longhurst, 2003; Bryman, 2008; Newing, 2011). Focus groups should be held in a setting that is relatively neutral in order for the discussions to flow freely as well as a space where the participants will feel comfortable (Longhurst, 2003; Conradson, 2005). Questions and/or themes should be identified before the focus group is conducted which are be designed to elicit information that is factual, descriptive, thoughtful or emotional, leaving more thought-provoking questions are left to the second half of the focus group (Longhurst, 2003; Conradson, 2005; Valentine, 2005).

Following the questionnaire survey, detailed insights into public engagements with addressing climate change and CBCRS were also called for. This research required "real words" (Wisker, 2001: 168) to identify key themes and issues. The questionnaire generated valuable perspectives and initial contexts of addressing climate change at the community level but also sparked a desire to explore the character of individual engagements and participation in more depth. Focus groups were used as "an efficient and interesting way of gaining insight into the ways in which people construct environmental and social issues, share knowledge, experiences and prejudices, and argue their different points of view" (Bedford and Burgess, 2001: 121 in Conradson, 2005).

Although the potential pitfalls of focus groups are frequently highlighted, such as conspicuous facilitator participation and disjointed interaction (Morgan, 1997; Puchta and Potter, 2004; Stewart *et al*., 2007), focus groups produce valuable subjective, emotional responses and multi-vocality (Morgan, 1997; Bryman, 2008; Newing, 2011). Focus groups can provide possibilities for exploring the gap between what people say and what they do (Conradson, 2005). This method is therefore a useful technique to explore this divergence. It is these responses that are integral to an in-depth understanding of engagements with, and participation in, CBCRS. Facilitator inputs were kept to a minimum in order to create opportunities for group conversation and the emergence of non-facilitator generated thematic discussion.

4.8.2. Focus group style and content

The focus groups followed a series of themes that allowed participants to freely express their experiences and attitudes in their own language (Oppenheim, 1992). The topics covered were as follows:

- General environmental concerns,
- Attitudes towards addressing climate change,
- Actions taken to address climate change (including motivations, enablers and barriers),
- Understanding of sustainable, low-carbon living (including enablers and barriers),

- Understanding (and awareness) of CBCRS in their community and the acceptability of such projects,
- Levels of engagement with CBCRS (what they think, feel and do about them),
- Extent to which residents do or would (not) participate in (a proposed) CBCRS.

Ethical considerations relating to focus groups are highlighted in Section 4.4 and detailed in Appendix 1. A copy of the focus group consent form can be found in Appendix 8. A number of participants were asked to comment on the analysis of the focus groups to address the issue of validity, as suggested by Aronson (1994).

4.8.3. Ensuring reliability and validity in qualitative research

Making sense of what is observed during fieldwork observations is a process that relies on what the researcher already knows and already believes, and is not started with a clean sheet (Denscombe, 2010). The meanings attached to processes and events that occur by researchers are a product of our own culture, social background and personal experiences (Mauthner and Doucet, 2003). Consequently, Denscombe (2010) argues that we have no way to reach a truly objective and neutral vantage point from which to view things 'as they really are' and subsequently researchers can only describe them 'as we see them', and this is shaped by our own culture. The researcher's 'self' (identity, values and beliefs) becomes part of the equation, a component that cannot be eliminated as an influence on the end-product findings of the project (Mauthner and Doucet, 2003; Denscombe, 2010, Savin-Baden and Howell Major, 2013). The researcher is therefore integrated in, and integral to, the research whereby the researcher is intimately involved in the process and product of the research (Dowling, 2006; Savin-Baden and Howell Major, 2013).

Researchers must supply their readers with an insight into the possible influence of the researcher's self on the interpretation of events, processes or cultures (Arber, 2006; Watt, 2007; Denscombe, 2010; Savin-Baden and Howell Major, 2013). This reflection on the researcher's self is ideally placed within the methodology or as a preface to the research (Denscombe, 2010). In this thesis, a reflexive account on the researcher's self is included as a Preface to the study. Savin-Baden and Howell Major

(2013) argue that the reflexive account provided highlight the researcher's positionality and that the researcher become aware of potential bias, particularly allowing one's preconceptions to unintentionally influence research and the ability to consider alternatives and view data in it's entirety. Therefore, acknowledging and embracing differing views with respect to addressing climate change at the community level reduces bias, and enhances the reliability of the data collected.

In order to reduce bias and enhance reliability, a research journal was kept during the qualitative phases of study to keep an account of the researcher's thoughts and reflections on the research process and subject matter. The keeping of a research journal ensures transparency, reliability and validity during qualitative data collection, analysis and writing up (Mauthner and Doucet, 2003; Dowling, 2006; Watt, 2007; Gilgun, 2010).

4.8.4. Socio-demographic profile of participants

When using quantitative methods, the aim is often to choose a random or representative sample, to be objective and able to replicate the data (Longhurst, 2003; McLafferty, 2007). With qualitative methods this is not the case. The aim of a focus group is not to be representative but to understand how individuals experience and make sense of their own lives (Valentine, 2005). There are numerous strategies for recruiting participants for focus groups: including a request at the end of a questionnaire to participate in a follow-up interview or advertise for participants in local newspapers or radio stations (Longhurst, 2003; Valentine, 2005; Bryman, 2008; Newing, 2011).

The researcher used numerous methods in order to recruit participants for the focus groups. Firstly, and by far the most effective method, was including a request at the end of the questionnaire to participate in a follow-up focus group. Respondents who were open to the idea of being in a focus group left an email address or phone number in response to this request for the researcher to contact them at a later date. Secondly, the researcher asked the co-ordinators of the community responses in Blacon and Congleton to identify residents who actively participate and would be

willing to be contacted to discuss their participation in the projects during a focus group. This method did not prove to be as effective. Other methods, such as contacting local organisations such as the Women's Institute and placing posters in local libraries and shops were also used to recruit participants, with varying degrees of efficiency.

Focus groups in all three communities were convened in August to October 2013, comprising between 4 and 5 participants, conforming to generally accepted optimal numbers for meaningful focus group operation (Finn *et al*., 2000; Longhurst, 2003; Boddy, 2005). The focus groups were audiotaped (Bryman, 2008; Newing, 2011), and transcribed verbatim using the processes detailed by Conradson (2005) and Savin-Baden and Howell Major (2013). The participants discussed their levels of engagement with issues related to addressing climate change and their (potential) participation in CBCRS, between 45 minutes to an hour and a half. The socio-demographic values of the focus group participants are provided in Table 4.3.

Table 4.3: Focus group participant socio-demographic values

Location	ID Number	Gender	Age	Occupation	Date and Time of Focus Group
Blacon	BP1	Male	24	Hospital Porter	11/08/13 1 hour 16 mins
	BP2	Male	24	Administrator	
	BP3	Female	24	Teacher	
	BP4	Female	24	Nursery Nurse	
Congleton	CP1	Female	46	Health Visitor	25/08/13 1 hour 10 mins
	CP2	Male	76	Retired	
	CP3	Female	74	Retired	
	CP4	Female	23	Primary Teacher	
	CP5	Male	47	Project Engineer	
Northwood	NP1	Male	50	Air Ambulance Paramedic	07/09/13 1 hour 36 mins
	NP2	Female	41	School Nursing Sister	
	NP3	Female	53	Nurse	
	NP4	Female	20	Student	
	NP5	Male	27	Support Worker	22/09/2013 46 mins
	NP6	Male	53	Office Manager	
	NP7	Female	23	Retail Assistant	
	NP8	Male	30	Logistics Manager	

4.9. DATA INPUT AND ANALYSIS

4.9.1. Quantitative data input and analysis

With regard to data input for the questionnaires, workbooks were created in Microsoft Excel for each location of data collection. Each workbook had five worksheets relating to the five sections of the questionnaire (Section 4.7.2). Using Microsoft Excel for data input allowed for descriptive statistics to be made, and have a flexible database to adjust when necessary. Qualitative data was also quantified to highlight the prevalence of conceptual themes. Quantitative and qualitative data from the questionnaire were coded into researcher-defined ('emic') and participant-defined ('etic') categories (Crang, 2005; Rogers *et al.*, 2008). The coding sheet for the questionnaire can be found in Appendix 9. Inputting, coding and analysing the data allowed for the researcher to understand public perspectives towards addressing climate change in all three areas.

Respondents to the questionnaires for all three communities surveyed were allocated a number using the following system:

- Congleton Sustainability Group questionnaire respondent: CR1, CR2, CR3 etc
- Sustainable Blacon questionnaire respondent: BR1, BR2, BR3 etc
- Northwood questionnaire respondent: NR1, NR2, NR3 etc

SPSS (Version 21) was used to carry out additional descriptive and analytical statistics of the survey data including chi-squared analysis (McKendrick, 2003; Dancey and Reidy, 2007; Field, 2009; Whitmarsh, 2009a; Dancey *et al.*, 2012; McKillup, 2012). These were used to determine whether there was any significant variation between responses in all three communities.

Chi-squared analysis is used to investigate statistical association between variables (Egbue and Long, 2012), essentially, investigating whether there is a relationship between two categorical variables (Field, 2009). This is done primarily by testing the null hypothesis that there is no association or relationship between a set of groups

or outcomes for a response (Field, 2009; Egbue and Long, 2012). This statistical test compares observed and expected frequencies for categorical variables and highlights where there is significant variation (Pallant, 2007; Field, 2009; McKillup, 2012). For large values of x^2 this test rejects the null hypothesis in favour of the alternative hypothesis that there is a relationship between two variables (Field, 2009; Egbue and Long, 2012). The standardised measure of 5% or 0.05 cut-off for defining what is statistically significant different, therefore, an associated *p*-value of 0.05 indicates there is significant evidence of association between variables (Pallant, 2007; Field, 2009; Egbue and Long, 2012; McKillup, 2012). There are limitations to chi-squared analysis. Chi-squared analysis may not be accurate if more than 20% of expected frequencies are less than 5 (Field, 2009), although some suggest a value of no more than 25% (Dancey and Reidy, 2007).

4.9.2. Qualitative data input and analysis

With respect to data analysis for the focus groups, each recording was transcribed verbatim. Transcription can be understood as the first stage of analysis, becoming familiar with the data (Landridge, 2004; Bailey, 2008). For the reasons mentioned in Section 4.4, participants in focus groups for all three communities surveyed were allocated a number using the following system:

- Congleton Sustainability Group focus group participant: CP1, CP2, CP3 etc
- Sustainable Blacon focus group participant: BP1, BP2, BP3 etc
- Northwood focus group participant: NP1, NP2, NP3 etc

In line with the pragmatic paradigm adopted in this study and the outline of pragmatic qualitative research (Section 4.3), Cooper and Endacott (2007) suggest that inductive approaches are ideally suited to this approach, and identify three general steps (Box 4.4).

Box 4.4: Three steps to pragmatic qualitative research (Cooper and Endacott, 2007; Savin-Baden and Howell Major, 2013).

1. Reduce and display data: researchers independently read and re-read the transcripts (giving attention to their preconceived ideas); then they

independently identify key categories and chart them appropriately

2. Draw conclusions: researchers identify category clusters and indicate relationships within the data. This step enables development of overarching themes and sub-themes.
3. Confirm the results: researchers weigh the evidence and make contrasts and comparisons.

Coding is also used in qualitative analysis. After reading, and re-reading, transcripts researchers begin to code the data generated (Landrigde, 2004; Cooper and Endacott, 2007; Savin-Baden and Howell Major, 2013). Coding is simply assigning labels to textual data, and is usually applied to 'chunks of data' such as words, phrases, sentences or even paragraphs, and allows for a close study of data (Landridge, 2004). Coding is generally done to accomplish one of two things: description or analysis. Descriptive coding is a process of summarising or describing the text and tends to involve deriving codes from the actual language of the text, whereas analytical coding means deriving codes based upon what the researcher believes is going on (Savin-Baden and Howell Major, 2013).

Box 4.5: Characteristics of qualitative coding

Codes in the context of qualitative research is a system of symbols or words used to represent and label a theme, which is meaningful and provides an indication of the idea contained in the data segment (Newing, 2011; Savin-Baden and Howell Major, 2013). Qualitative coding tends to have the following characteristics:

- Codes tend to be based upon themes, topics, terms and keywords that can be based upon theoretical frameworks or come from the data itself (Savin-Baden and Howell Major, 2013).
- Codes are usually hierarchial, including a small number of top-level codes and additional codes for subcategories with each of them (Landridge, 2004; Newing, 2011).
- As each study is unique, so are its analytical methods. Saldana (2012) comments that there is no one 'right' way to code qualitative data and that it's primarily an interpretive act rather than a precise science which grants researchers flexibility.

Newing (2011) comments that it is more common that codes are developed from scratch or, probably the most common approach is, to define some broad codes in advance in line with the research aims, then develop the more detailed codes and sub-codes later on according to what emerges from the data.

Savin-Baden and Howell Major (2013) indicate that Saldana (2012) refers to first-cycle coding and second-cycle coding. In open coding, the researcher conceptualises the data line by line, and requires conceptualising all related incidents in order to yield many concepts (Charmaz, 2006; Saldana, 2012). The result of open coding should be a list of the codes and categories attached to the text (Flick, 2009). Axial coding involves a set of procedures whereby data are put back together in new ways after open coding, by making connections between categories. Strauss and Corbin (1998: 96) propose the use of a coding paradigm that involves "conditions, context, action/interactional strategies, and consequences" (Box 4.6).

Box 4.6: Dimensions of Strauss and Corbin's (1998) coding paradigm (Flick, 2009; Savin-Baden and Howell Major, 2013).

1. *Conditions:* Why? What has led to the situation? Background? Course?
2. *Context:* What is the phenomenon under study?
3. *Action/Interactional strategies:* Who acted? What happened? What are the ways in which the phenomenon is managed and handled?
4. *Consequences:* What changed? Consequences/results?

The coding paradigm requires focusing on causal relationships and seeks to categorise incidents into a frame that structures generic relationships. Despite Glaser and Holton (2004) believing axial coding to be restrictive, this method does ensure a constant focus on the research questions are maintained. Strauss and Corbin (1990: 114) summarise axial coding as a:

> "process of relating subcategories to a category. It is a complex process of inductive and deductive thinking, involving several steps. These are accomplished, as with open coding, by making comparisons and asking questions. However, in axial coding the use of these procedures is more focused, and geared toward discovering and relating categories in terms of the paradigm model"

In axial coding, the categories that are most relevant to the research question are selected from the developed codes, and many different passages from the text are

sought as evidence for these (Flick, 2009). In order to structure the intermediate results (means-end, cause-effect, temporal, global-local), relations are elaborated between the axial categories by using the dimensions of the coding paradigm (Flick, 2009).

The method of coding undertaken in this study follows the process outlined by Crang (2005) and Savin-Baden and Howell Major (2013) that open coding should be done first, followed by axial coding. This approach to coding, as outlined, provides both description and interpretation (Landridge, 2004; Saldana, 2012) and is in keeping with a thematic analysis (Braun and Clarke, 2006; Savin-Baden and Howell Major, 2013). This procedure is, in fact, a short step from thematic analysis, which draws out overarching themes in the data (Landridge, 2004). Along with the coding undertaken, theoretical memos were also written to help transition to the theory-building stage of qualitative analysis (Landridge, 2004; Crang, 2005; Gilgun, 2010; Newing, 2011). Memos can be used alongside codes (Crang, 2005), or as part of a reflexive journal (Gilgun, 2010). Memos were placed alongside codes and the participant's statements, but referred to extensively in the reflexive journal.

As researchers accumulate codes, they may seek a way to organise or categorise them. This phase involves movement from the particular (individual codes) to the general (patterns and themes within those codes) (Savin-Baden and Howell Major, 2013), and strongly relates to the procedures of thematic analysis, and identifying themes (Phase 3) (Braun and Clarke, 2006). Categories can be flat (a general list) or hierarchical (a list of categories or sub-codes). This stage of qualitative analysis involves working out how codes can be categorised and how categories or concepts relate to each other. This is an important step towards beginning to theorise about the data.

The qualitative data in this study was analysed 'by hand'. Sorting by hand, instead of using a computer software package (i.e. Nvivo), may seem 'old-fashioned' but allows researchers to be 'hands on', and become fully immersed in the data (Savin-Baden and Howell Major, 2013). Researchers using this approach work with the data

enough to know it extensively and develop an intuitive sense of its essential features and elements, which allows them to feel the patterns in the data (Savin-Baden and Howell Major, 2013).

Following transcription and coding, thematic analysis was chosen as an appropriate method of data analysis for the qualitative data (Aronson, 1994; Landridge, 2004; Conradson, 2005; Crang, 2005; Braun and Clarke, 2006; Savin-Baden and Howell Major, 2013). It is critical to select an analytical approach carefully with pragmatic qualitative research, such as thematic analysis (Savin-Baden and Howell Major, 2013). Thematic analysis focuses on identifying, analysing and reporting themes and patterns of living, attitude or behaviour (Aronson, 1994; Braun and Clarke, 2006; Savin-Baden and Howell Major, 2013). Braun and Clarke (2006) advocate thematic analysis as a useful and flexible method to analyse qualitative data. Its advantages for use in this study include its flexibility and its ability to incorporate both researcher and participant contributions. It has the capacity to capture conversational outputs at a precise point in time, in this case at a pivotal point in the development of CBCRS and understanding engagements with addressing climate change at the community level. Thematic analysis is an ideal method of data analysis, aiming to capture a general sense of what the speaker is saying and the meaning of the whole in context, as opposed to highlighting important terms (keyword analysis), frequently used terms and phrases (content analysis), or a comparison of key concepts (constant comparison) (Savin-Baden and Howell Major, 2013).

There is no clear agreement for what thematic analysis is, or how one does it, although it appears that much of what qualitative researchers do when analysing data is actually thematic analysis (Braun and Wilkinson, 2003; Savin-Baden and Howell Major, 2013). Thematic analysis is not necessarily wedded to any pre-existing philosophical stance, and can be used across any of them, as Braun and Clarke (2006) states that it can be a method that works to reflect reality, and to unpick or unravel the surface of ‘reality’. However, it is important that the theoretical position is made clear. Cited in Section 4.3, the theoretical underpinning of this thesis is pragmatism

and uses this approach for pragmatic qualitative research (Savin-Baden and Howell Major, 2013).

This method is not a linear process from phase to phase but more of a recursive process, where the researcher moves back and forth when needed (Braun and Clarke, 2006; Savin-Baden and Howell Major, 2013). The idea, as Savin-Baden and Howell Major (2013) suggest, is to get a feel for the whole text by living with it prior to any cutting or coding. Despite the method not being the "most scientific sounding method", Savin-Baden and Howell Major (2013) believe it to be one of the best. The researcher can rely on intuition and sensing, rather than being bound by hard and fasts rules of analysis. This method of data analysis fits firmly with the philosophical approach of pragmatism, being a practical and flexible method of analysis. The process of thematic analysis has six stages (Table 4.4). These phases are guidelines and not rules, which need to be applied with flexibility (Braun and Clarke, 2006). These steps to thematic analysis also fit firmly within the three steps to pragmatic qualitative research (Box 4.4) highlighted by Cooper and Endacott (2007).

Table 4.4: Phases of Thematic Analysis (Braun and Clarke, 2006; Savin-Baden and Howell Major, 2013).

Phase	Description of the Process
1. Familiarising yourself with the data	Transcribing data (if necessary), reading and re-reading the data, noting down initial ideas – searching for meanings and patterns.
2. Generating initial codes	Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code.
3. Searching for themes	Collating codes into potential themes, gathering all data relevant to each potential theme.
4. Reviewing themes	Checking the themes work in relation to the coded extracts (Level 1) and the entire data set (Level 2), generating a thematic map of the analysis. Develop a thematic map that accurately reflects the data.
5. Defining and naming themes	Ongoing analysis to refine the specifics of each theme and the overall story the analysis tells, generating clear definitions and names for each theme.
6. Producing the report	The final opportunity for analysis: selection of vivid, compelling extract examples, final analysis of selected extracts, relating back of the analysis to the research question and literature, producing a scholarly report of the analysis.

Much of what has been described in this Section relates to the phases of thematic analysis (Braun and Clarke, 2006), and was the overarching procedure followed when analysing the focus group transcripts in this study.

With respect to interpreting results, Savin-Baden and Howell Major (2013) state that there are no strong guides although Sandelowski (2000) suggests that interpretation is low inference, and thus results in easier consensus amongst pragmatic qualitative researchers. Pragmatic qualitative research aims for description of an event or experience, as interpreted by the researcher (Savin-Baden and Howell Major, 2013).

4.10. CHAPTER SUMMARY

This chapter has discussed, and justified, the choice of paradigmatic foundation and methodological approach taken in this thesis. The chapter concluded by stating the thesis was underpinned by a pragmatic paradigm, utilising both quantitative and qualitative methods in a mixed methods approach. A mixed methodological approach, underpinned by a pragmatic paradigm, is justified as the preferred choice of design (as exemplified in Figure 4.1) as it provides both breadth and depth in investigating addressing climate change at the community level. Additionally, this approach to research also concludes with valid and well-substantiated conclusions about a single phenomenon, in this case, pertaining to attitudes and actions towards addressing climate change as well as engagements with, and participation in, CBCRS.

This chapter has outlined, and justified, the aims of each stage of the research process and the methods used to collect, and analyse, data in this research (Figure 4.1) to best address the aims of the study highlighted in Section 1.6. The CBCRS used in this study (Sustainable Blacon and Congleton Sustainability Group) were chosen because the objectives primarily aim to reduce domestic and whole-community carbon emissions. There are differences between Sustainable Blacon and Congleton Sustainability Group, which allow for conclusions to be drawn regarding the approaches taken to address climate change at the community level. Additionally, a community without a community-based sustainability programme (Northwood) was

also chosen to explore public attitudes and actions towards addressing climate change as well as engagement with, and participation in, CBCRS.

Data collection techniques included both quantitative and qualitative methods: questionnaires (Parfitt, 2005; McLafferty, 2007) and focus groups (Conradson, 2005) to provide a comprehensive approach to investigating addressing climate change at the community level (Bryman, 2008; Newing, 2011). Each data collection technique explored a specific dimension of this topic. Questionnaires were utilised to understand public attitudes and actions towards addressing climate change and local carbon reduction projects. Focus groups were employed to explore engagement with, and participation in, CBCRS. The data collection techniques used here corresponds to a mixed methodology appropriate for this study (Tashakkori and Teddlie, 1998; Creswell and Plano Clark, 2007; Bryman, 2008; Rogers *et al.*, 2008; Peters *et al.*, 2010). With respect to data analysis, descriptive and analytical statistics were used for analysing quantitative data (Dancey and Reidy, 2007) and thematic analysis was used to analyse qualitative data associated with the focus groups (Braun and Clarke, 2006; Savin-Baden and Howell Major, 2013).

Box 4.7: Subsequent chapters of the thesis

Chapters 5, 6, and 7 focus on the analysis and presentation of results, and directly correspond to answering the research questions highlighted in Section 1.6. As outlined in this chapter, this is an appropriate methodology for investigating addressing climate change at the community level. Chapters 5, 6, and 7 are set out thematically, and present results from both stages of research: questionnaire surveys and focus groups. Chapter 5 explores understanding of, and attitudes towards, (addressing) climate change. Chapter 6 reports the actions people undertake to address climate change, and their considerations of the enablers and barriers to sustainable living. Chapter 7 highlights the ways in which residents engage with, and participate in, CBCRS. Chapter 7 also discusses the acceptability of CBCRS that aim to facilitate a transition towards low-carbon, sustainable living. In each chapter, all three communities' results are presented in their own context while similarities and differences are highlighted between them in terms of the varying context of CBCRS.

CHAPTER 5: UNDERSTANDING AWARENESS OF, AND ATTITUDES TOWARDS, ADDRESSING CLIMATE CHANGE

5.1. INTRODUCTION

This chapter serves to introduce a new part of the thesis focusing on the analysis and presentation of results. This chapter analyses results from the first and second stage of data collection, using the analytical techniques described in Section 4.7, this chapter examines the nature of individuals understanding of, attitudes towards, (addressing) climate change. This chapter directly addresses the first research question in section 1.6.

Box 5.1: Overview of chapter

Section 5.2 explores environmental attitudes and the relative importance of (addressing) climate change in the context of everyday priorities. This section assesses the extent to which (addressing) climate change is prioritised in the context of everyday and environmental issues.

Section 5.3 explores awareness and understanding of the key terminology referred to climate change, the causes and impacts of climate change, and awareness of action occurring within the local authority of respondents (Blacon, Congleton and Northwood).

Section 5.4 examines the frequency to which people hear about climate change related information, and from which sources that information is retrieved. Moreover, it assesses the frequency to which people discuss climate change related information. Here, Section 5.4 assesses the frequency to which respondents are engaged with (addressing) climate change.

Section 5.5 examines attitudinal responses towards (addressing) climate change including reference to carbon reduction practices and climate scepticism. Finally, Section 5.6 concludes by summarising and describing the main findings of this chapter.

5.2. ENVIRONMENTAL ATTITUDES AND THE RELATIVE IMPORTANCE OF (ADDRESSING) CLIMATE CHANGE

5.2.1. The relative importance of environmental issues and prioritising (addressing) climate change

Previous studies have indicated that the majority of people claim to be concerned about most environmental issues (Bord *et al.*, 2000). Pidgeon and Poortinga (2003) explored measuring environmental concerns within the broader context of personal, social, economic and environmental matters provides revealing results about the relative importance of (addressing) climate change.

Respondents were asked to respond to the following open-ended questions: (1) what they consider to be three most important issues to them personally; (2) what the three most important issues are to society; (3) what they consider to be the three most important environmental issues to them; and (4) what the three most important environmental issues are to society.

5.2.1.1. Addressing climate change in the context of perceived important issues

Within the broader range of personal and social issues, respondents primarily consider immediate concerns including their employment and work careers (*n*=358), and their social network including their immediate family and friends (*n*=321), as the most important issues facing them. Other predominant issues important to respondents were financial concerns (*n*=227), issues relating to health (*n*=132) and recession (*n*=68). Climate change/global warming (*n*=33) was ranked in thirteenth place. Respondents also mentioned that the environment (*n*=18), pollution (*n*=9) and recycling waste (*n*=5) were issues facing respondents.

In the context of other issues, climate change secures its place as a respectable middle ranked issue. This result is intriguing, as previous studies have highlighted that in the context of everyday life, climate change is not considered to be a priority and is often lowly ranked (Poortinga and Pidgeon, 2003). Comparisons between respondents in each community are revealing. Respondents in Northwood identified

climate change (*n*=19) more than those in Blacon (*n*=8) and Congleton (*n*=6), and also considered that energy costs (*n*=13) were an important issue facing themselves than residents in Blacon (*n*=3) and Congleton (*n*=2).

In comparison to the important issues facing themselves, respondents noted that climate change (*n*=58) is accorded a higher priority as an issue facing society. Other environmental issues were also accorded a higher priority in comparison to respondents identifying such issues as being lower with respect to themselves. For example, respondents noted that the environment (*n*=45) and pollution (*n*=16) were more serious issues facing society.

Overall, respondents ranked climate change/global warming in thirteenth place with regard to important issues facing respondents, whereas in comparison to important issues facing society, climate change/global warming was ranked in tenth. This result demonstrates that climate change appears distant, spatially and temporally, from everyday concerns and experiences. In the context of more immediate, tangible and local concerns, climate change is not considered a priority issue or perceived to be a direct personal risk (Giddens, 2009; Gifford *et al.*, 2009; Ockwell *et al.*, 2009; Devine-Wright, 2013).

5.2.1.2. Addressing climate change in the context of perceived important environmental issues

Previous research shows historically that climate change has been accorded a low priority in the context of other environmental issues, despite being considered a socially relevant subject; many do not feel that climate change poses a significant threat to their lives to consider it a priority (Lorenzoni and Langford, 2005; Ockwell *et al.*, 2009).

Respondents identified 18 environmental issues that they believe to be personally affecting them at the time of survey. Overwhelmingly, residents identified that climate change (*n*=271) was the most important environmental issue facing them at present. This result stands out from previous research as climate change is often

accorded a low priority in the context of other environmental issues (Ockwell *et al.*, 2009). However, this question was placed towards the latter half of the questionnaire, which could lead to bias of these results.

Respondents also identified that pollution was a significant environmental issue following climate change (*n*=240), and was ranked second by respondents. In this context, respondents highlighted that pollution was interlinked with climate change and that addressing one would help to tackle the other. Some respondents stated that they saw pollution to be an issue separate from climate change, resulting in negative health impacts. Ranked third, a substantial number of respondents identified that there were no environmental issues (*n*=171) facing them at present.

Other important environmental issues such as energy costs (*n*=64), reducing carbon emissions/pollution (*n*=43), flooding (*n*=26), animal cruelty (*n*=13) and society's attitude towards the environment (*n*=5) were also identified. Respondents noted that society held a negative attitude towards addressing issues, including climate change and other serious environmental issues.

To follow, respondents were then asked to identify the important environmental issues facing society, and identified a total of 16 environmental issues that they believe to be personally affecting them at the time of survey. In comparison with the identified environmental issues facing themselves, the most common responses identified were, similarly, climate change (*n*=416) and pollution (*n*=242). Again, ranked third, respondents identified that there were no important environmental issues facing society (*n*=92).

These results indicate that respondents consider there are more environmental issues facing society than they believe are facing themselves. In comparison with environmental issues facing respondents, issues such as energy costs (*n*=64), flooding (*n*=57), and reducing carbon emissions (*n*=52) were noted more as issues facing society indicating that these issues are the concern of everyone. It is

interesting to note that respondents did not identify society's attitude towards the environment as an issue facing society, but rather an issue facing themselves.

5.2.1.3. Prioritising the relative importance of (addressing) climate change

Focus group participants were similarly asked to describe what were the most important environmental concerns to them. These results provide a level of depth into the reasons why they are concerned for a range of environmental issues, including climate change. The concerns raised by participants are consistent with those mentioned in the questionnaire survey. Participants mentioned a range of environmental concerns, including waste; litter; traffic congestion; weather; wildlife; pollution; and climate change. Participants indicated that the predominant environmental concerns were pollution, wildlife and weather (specifically changes in weather) were of personal importance. Although many participants commented that pollution and weather were of concern, older participants indicated that pollution and weather were of concern to them because of their own observations and experiences:

> "The weather and the changes that have happened over the past 50 years" (CP5),
>
> "We've been around for 50 years, so really, we can see that it has" (CP3).

The interaction between CP3 and CP5 indicate that their understanding, observation, and experience, of changes to weather and climate over decades are a cause for personal concern. Observation and experience of (addressing) climate change was a major theme used to substantiate environmental concerns and attitudes towards (addressing) climate change.

Disposing of, and reducing, waste was also an important environmental concern for participants. The concepts of reducing waste and environmental impacts were themes highlighted across all focus groups. For example, with respect to environmental concerns, the following extract indicates the recurring theme of reducing environmental impacts:

> "Trying to reduce our household waste, and do more recycling" (BP2),
> "I'm not really sure about concerns. I do… try to reduce my household waste anyway… and recycle" (BP4).

Although the above interaction demonstrates the concept that reducing environmental impacts is an important concern to participants, BP4 suggests that they take action to reduce waste and recycle, not out of concern for the environment, but for alternative reasons. However, participants were not just concerned with how the disposal and reduction of waste was dealt with on land, but also at sea:

> "I worry about how waste is disposed of into the sea… you know, when we have oil spills and how that impacts the environment. That's very worrying" (NP2).

This comment by NP2 highlights that although far removed from waste disposal into the sea, it is an environmental concern, along with energy generation and potential hazards that consequently arise. This concern for maritime environmental impacts may have arisen as a result of the highly publicised impacts to the oceanic environment and ecosystem from the Deepwater Horizon Oil Spill in the Gulf of Mexico had in 2010.

Participants also stated that they were concerned about resources for future generations:

> "We need to make sure that there are plenty of fish in the sea for future generations, our children and their children to enjoy the diet we're enjoying now really" (BP1),
> "That links in, not just with the food side, but like the energy side of things as well. Like the way that BP3 was saying with wind energy… trying to keep what we've built up but trying to use energy in different ways" (BP2).

This interaction demonstrates clearly that participants are personally concerned with a range of environmental issues that not just impact upon themselves, but also future generations. This interaction also illustrates that stewardship of resources and the environment is a real concern. BP1 notes that future generations should "enjoy" the resources that they do presently. This suggests that, in the minds of participants, the values placed on lifestyles are something that are not static but constantly change, nor are these values divorced from impacts on, and to, the environment. This remark also suggests that resources including food and energy should be shared equally amongst generations. These points relate to the intergenerational equity dimension of the distribution of resources for sustainable development (Middleton, 2003; Dresner, 2008).

The survey and focus group data indicate that within the context of personal and social issues, climate change and environmental issues are accorded a medium priority, but removed from everyday immediate, tangible and local concerns (Giddens, 2009; Gifford *et al.*, 2009), and is broadly consistent with previous studies (Pidgeon and Poortinga, 2003). Respondents noted that climate change was more of an important issue facing society then themselves. This result supports the assertion by Ockwell *et al.* (2009) that climate change is removed in time and space and that people believe that it impacts on other people and places.

For focus group participants who stated that they are concerned about (addressing) climate change, the reasons provided for their concern were often in terms of impacts on wildlife and future generations (see Section 5.5.2). Focus group participants also demonstrate that environmental concerns are defined, and reflected upon, in terms of understanding, observation and direct experience, and relate to a combination of personal, social and environmental concerns.

5.2.2. Environmental Attitudes

To place environmental concerns, and concern for climate change, in the context of broader values, survey respondents were asked about their attitude towards the

environment, specifically whether they considered protecting the environment was important. This was taken as a measure of respondents' environmental attitudes.

The majority of respondents stated that they considered that protecting the environment was important (*n*=458, 74%) Some respondents stated that they were unsure about whether the environment should be protected or not (*n*=98, 15.8%). A small minority stated that they thought protecting the environment was not important (*n*=63, 10.2%). Table 5.1 demonstrates statistical variations between different environmental attitudes.

Table 5.1: Variation between attitudes towards protecting the environment

Attitude towards the environment	**Groups with significantly higher proportions of responses**	
	Percentage	**Characteristic**
Believe protecting the environment is important Blacon: *n*=151, 69.6% Congleton: *n*=142; 72.4% Northwood: *n*=165; 80.1%	17.5%	Member of environmental organisation (x^2=19.395, df=2, p<0.000)
	37.3%	Readership of environmental magazines (x^2=51.297, df=2, p<0.000)
	44.8%	Viewership of environmental programmes (x^2=70.688, df=2, p<0.000)
	56.5%	Educated to further education level or above (x^2=19.748, df=8, p<0.011)
	42.8%	Employed full time (x^2=110.994, df=10, p<0.000)
	38%	Retired (x^2=110.994, df=10, p<0.000)
	46.3%	Ages 36-55 (x^2=35.419, df=10, p<0.000)
Unsure about whether protecting the environment is important Blacon: *n*=42, 19.4% Congleton: *n*=32; 16.3% Northwood: *n*=24; 11.7%	63.2%	Educated up to secondary level (x^2=19.748, df=8, p<0.011)
	26.5%	Employed part time (x^2=110.994, df=10, p<0.000)
	27.6%	Ages 36-45 (x^2=35.419, df=10, p<0.000)
Believe protecting the environment is not important	53.9%	Educated up to secondary level (x^2=19.748, df=8, p<0.011)
	47.6%	Unemployed (x^2=110.994, df=10, p<0.000)

Blacon: *n*=24, 11.1% Congleton: *n*=22; 11.2% Northwood: *n*=17; 8.3%	55.6%	Ages 18-35 (x^2=35.419, df=10, p<0.000)

Chi-squared analysis demonstrates that attitudes towards environmental protection are significantly related to demographic variables and engagement with environmental materials and organisations. Specifically, those who are members of environmental organisations, read and watch environmental material are more likely to believe that protecting the environment is important. Higher proportions of those who are members of environmental societies; watch environmental programmes; and read environmental magazines are more likely to believe that protecting the environment is important (Anker-Nilssen, 2003; Hargreaves *et al.*, 2003). This finding suggests that those who are engaged with materials providing environmental information, and in environmental societies and activities, are more likely to hold pro-environmental values and beliefs (Poortinga *et al.*, 2002; Anker-Nilssen, 2003). Consequently, these findings suggest that those who are more informed, consider environmental issues to be more serious and, by extension, need addressing (Dunlap and McCright, 2008).

With respect to demographic values, the analysis shows that those who are qualified above college level are more likely to believe that environmental protection is important, whereas those educated up to secondary school level are either unsure or believe that protecting the environment is not important. This may suggest that those with higher levels of formal education, and income, are more likely to be aware of environmental issues and be more concerned (Anker-Nilssen, 2003; DEFRA, 2007). Additionally, this analysis shows that younger age groups are believe that environmental protection is not important. This result is partially consistent with other studies. Whilst middle age groups are more concerned about environmental issues (Upham *et al.*, 2009), Anker-Nilssen (2003) suggests that with more formal education younger people are more aware of, and concerned, about environmental issues. Yet, in this study, this finding is not substantiated.

Chi-squared analysis, however, showed that there were no significant associations between attitudes towards the environment and gender (x^2=0.528, df=2, p<0.768). Despite this, females are more likely than men to believe protecting the environment is important (75.2% and 72.9% respectively). This result is consistent with other research indicating that women are more concerned than men about environmental issues.

Following consideration of whether protecting the environment was important, respondents were then asked to provide reasons for their answer. Their responses are shown in Table 5.2.

Table 5.2: Attitudes towards environmental protection				
Attitude Statement	**Blacon**	**Congleton**	**Northwood**	**Total**
For future generations	61 (28.1%)	42 (21.4%)	42 (20.4%)	145 (23.4%)
Responsibility to protect the environment/ live within Earth's limits	17 (7.8%)	27 (13.8%)	36 (17.5%)	80 (12.9%)
Nothing wrong with the environment/it seems fine	30 (13.8%)	15 (7.7%)	24 (11.7%)	69 (11.1%)
Protection of natural habitats/environments/ wildlife/natural resources	13 (6%)	25 (12.8%)	29 (14.1%)	67 (10.8%)
Rely on environment for resources	22 (10.1%)	15 (7.7%)	22 (10.7%)	59 (9.5%)
Provides environmental services (for human survival)	9 (4.1%)	18 (9.2%)	8 (3.9%)	35 (5.7%)
Only have one planet/need to maintain environment for enjoyment/well-being	14 (6.5%)	8 (4.1%)	12 (5.8%)	34 (5.5%)
Don't think/care about the environment	15 (6.9%)	10 (5.1%)	5 (2.4%)	30 (4.8%)
Rely on environment for quality of life/lifestyle	9 (4.1%)	8 (4.1%)	8 (3.9%)	25 (4%)
Not important/not a priority	2 (0.9%)	18 (9.2%)	3 (1.5%)	23 (3.7%)
Important/beneficial to society	7 (3.2%)	3 (1.5%)	4 (1.9%)	14 (2.3%)
Having an impact on/exploiting the planet	3 (1.4%)	1 (0.5%)	7 (3.4%)	11 (1.8%)
Not affecting me/not a threat or risk	3 (1.4%)	3 (1.5%)	4 (1.9%)	10 (1.6%)
Nothing we can do about it	2 (0.9%)	3 (1.5%)	1 (0.5%)	6 (1%)
Depends what needs to be protected	5 (2.3%)	0 (0%)	1 (0.5%)	6 (1%)
Don't think it needs protecting	5 (2.3%)	0 (0%)	0 (0%)	5 (0.8%)
Total	*n*=217 (100%)	*n*=196 (100%)	*n*=206 (100%)	*n*=619 (100%)

Respondent's attitude statements were coded and categorised into four groupings which generally reflected the nature of the statement: positive comments indicating environmentally conscious statements (e.g. "The earth is very fragile, we have to look after it" BR68); positive comments highlighting the value of the environment for its resources and services (e.g. "We rely on the environment for clean water and

food" CR21); comments reflecting positions of uncertainty and neutral feelings towards the environment (e.g. "Not sure we have to do anything, seems fine" NR51); and negative comments highlighting a disregard for, or dismissive attitude towards, the environment and environmental protection (e.g. "I don't think environmental protection is important" CR12).

All respondent's who stated they considered environmental protection important provided positive responses. Their responses ranged from the need to protect the environment for future generations; protect specific elements of the environment and natural resources; relying on the environment for particular services essential to human survival, human development and enhance quality of life through resource use; to recognising the importance of the environment to society. Respondent's who stated that environmental protection was important highlighted resource consumption for a multitude of uses (environmental service and enhancing quality of life). Overall, comments relating to reliance for natural resources comprise 19.2% of responses. Such understandings of the importance of environmental protection are exemplified in the following quotes:

> "It's where we get our resources to live from" (BR13),
> "It's where I get all my things from and we need to make sure that it still produces that stuff" (CR124),
> "The environment produces and sustains our every need, we have to protect it because it is useful to us" (NR8).

In their exemplification of why they believe it is important to protect the environment, 23.4% of respondents (*n*=145) cited responsibility towards future generations. In this respect, these comments can be related to concepts indicating sustainable development and environmental stewardship, for example:

> "We have a responsibility for our children to protect the planet" (BR12),
> "We have a responsibility to protect the environment for future generations" (CR180),

> "We only have one stab at protecting the environment and have to protect it for future generations, animals, plants and food" (NR11).

NR11 identifies the interconnected nature between people, their environment, wildlife, resources and environmental protection. The concept of responsibility that has been identified with respect to the importance of environmental protection infers that respondents are concerned about the state of the environment and human interactions with it, and believe that there is a normative dimension to protecting the environment. NR18 states that it is important to protect the environment because it is "our moral obligation to do so". These responses towards protecting the environment for its resources and responsibility to future generations and the environment reflect notions of environmental sustainability and environmental stewardship (Mather and Chapman, 1995; Middleton, 2003; Wilson, 2010). Respondents also noted that the environment provided intangible advantages including enjoyment of green spaces and for human well-being (*n*=34, 5.5%). Such responses indicate that a small number of residents consider more than tangible benefits resulting from the environment and that such advantages are sufficient to warrant environmental protection.

Some respondents highlighted that there was a need to maintain the environment and not to overstep "environmental limits", and are exemplified as follows:

> "We've got to live within the planet's limits, and not [by] our greed" (BR141),
> "I think it's important that people live within environmental limits" (CR29),
> NR155 remarked that it was "necessary to live within earth's limits".

These comments indicate that respondents identify that the planets' resources can only sustain a finite amount of people. This attitude towards the environment and its protection is indicative of the concept of carrying capacity (Middleton, 2003). These comments reflect one of Milton's (1991) worldviews that "nature is robust within limits". Respondent's comments suggest that on a macro scale a level of caution is required to prevent irreparable damage to the environment and the degradation of

its resources. Indeed, BR141 highlights the significance of human interaction with the environment motivated by aspiration for more resource intensive materials. Consequently, respondents here indicate support for environmental protection as part of a precautionary principle to offset damage to the physical environment (Middleton, 2003).

Those who stated they were unsure about whether protecting the environment was important gave a mixed response of negative comments, and those relating to uncertainty, indicative of their perception that the environment did not need protecting; their apathy towards environmental issues; and environmental protection is dependent on a particular aspect of the environment. Some respondents stated that their uncertainty was based on a perception that there was no serious environmental issue that needs addressing. Attitude statements exemplified this uncertainty as follows:

> "I don't think there is any need to [protect the environment]" (BR213),
> "I don't think there's much wrong with the environment" (CR143),
> "Not sure if we have to do anything, it seems fine" (NR51).

Other respondents who stated that they were unsure about protecting the environment qualified their response and commented that their reasoning was dependent on what required protecting: "depends what needs to be protected, like cute little animals" (BR72) or that they did not know or care enough about the environment that they considered environmental protection was important.

Many respondents stated that they were uncertain about protecting the environment because they, or their perception of other people, were apathetic towards environmental issues: "[I'm] not that bothered [about the environment]" (BR15) and "not really an issue many people care about" (CR80). These comments encapsulate perceptions of other people feeling apathetic towards the environment, specifically environmental protection. Indeed, the comments by CR80 used terminology such as "we" implying, from the perspective of the respondent, that

there is a collective apathy towards addressing environmental issues. Hoffman (2010) argues that such assumptions can be related to people's perceptions of the dominant values of the "cultural community" they perceive themselves to belong. Kahan *et al.* (2012) reinforce this and state that the most consequential effect on beliefs about addressing environmental issues is likely to be on relations with an individual's peers.

Respondent's who considered environmental protection to not be important gave a range of comments based on their dismissal of needing to protect the environment; their apathy towards environmental issues; and feelings that the environment was not a priority within the context of other issues. Responses exemplifying their reasoning why protecting the environment is not important are as follows:

> "Not the world's biggest priority" (BR87),
> "It's not a threat to our way of life so why should we do anything about it" (BR135),
> "There are more important things to worry about" (CR14),
> "Not an important issue like fixing the economy" (CR75),
> "Environmental issues are not important" (NR99),
> "Nothing to worry about, the environment is fine" (NR153).

The comments above indicate two main points about respondent's that do not consider protecting the environment as an important issue. Firstly, the responses above highlight that environmental protection is not a priority, particularly in the context of other issues (i.e. the economy). Secondly, respondents do not see environmental issues as personally relevant or consider them to be a risk to them personally. Related to Milton's (1991) division of environmental worldviews, respondents consider nature to be robust, and that it can sustain human development and has no limits.

From this analysis, resident's responses can be placed along a continuum registering their concern about the environment, and whether or not it should be protected. On

one side of the continuum are respondent's who consider protection of the environment important and that these beliefs are underpinned by genuine environmentally conscious reasoning such as notions of environmental stewardship, concepts of sustainable development and considerations of the environment having "limits", related to the concept of carrying capacity (Mather and Chapman, 1995; Middleton, 2003). Taking a central position, are respondents who take a more neutral stance on environmental protection based on their uncertainty. This group of respondents question whether the environment requires protection; state that they do not know much about the environment to make an informed decision about environmental protection; and do not consider environmental issues a risk or threat to themselves. Related to the notion of risk perception, respondents do not consider environmental issues to personally affect them and equate this to according environmental protection of low importance (O'Connor *et al.*, 1999). On the opposite side of the continuum are those respondents who consider the environment does not need protecting, and base their feelings on their apathy towards environmental issues; their perception that there are no elements of the environment that require protection; and that environmental issues are not a priority or important.

5.3. AWARENESS AND UNDERSTANDING OF CLIMATE CHANGE AND CARBON REDUCTION

5.3.1. Awareness and understanding of (addressing) climate change terminology

To comprehend the public's level of understanding regarding (addressing) climate change, respondents were asked what they understood the terms "climate change" and "carbon reduction" to mean, and identify the causes and impacts of climate change. Previous studies have highlighted that ascertaining the public's understanding of scientific concepts such as climate change is important to gain an understanding of how the public conceptualise important environmental issues (Durant *et al.*, 1989; Sturgis and Allum, 2004; Whitmarsh, 2009a).

Therefore, before exploring residents' attitudes towards (addressing) climate change, questionnaires and focus groups first elicited awareness and understanding of the issue: definition of the terms "climate change" and "carbon reduction"; it's causes; and consequences.

5.3.1.1. Awareness and understanding of "climate change"

Respondents were specific with their choice of words when responding to their understanding of the term "climate change", and related to a specific aspect of climate change (i.e. natural causes; human activity; changing climate conditions; or the impacts of climate change). While this section discusses residents' understandings of "climate change", respondents' understanding of the causes and consequences are discussed in Sections 5.3.2.1 and 5.3.2.2. Figure 5.1 illustrates respondents understanding of the term climate change.

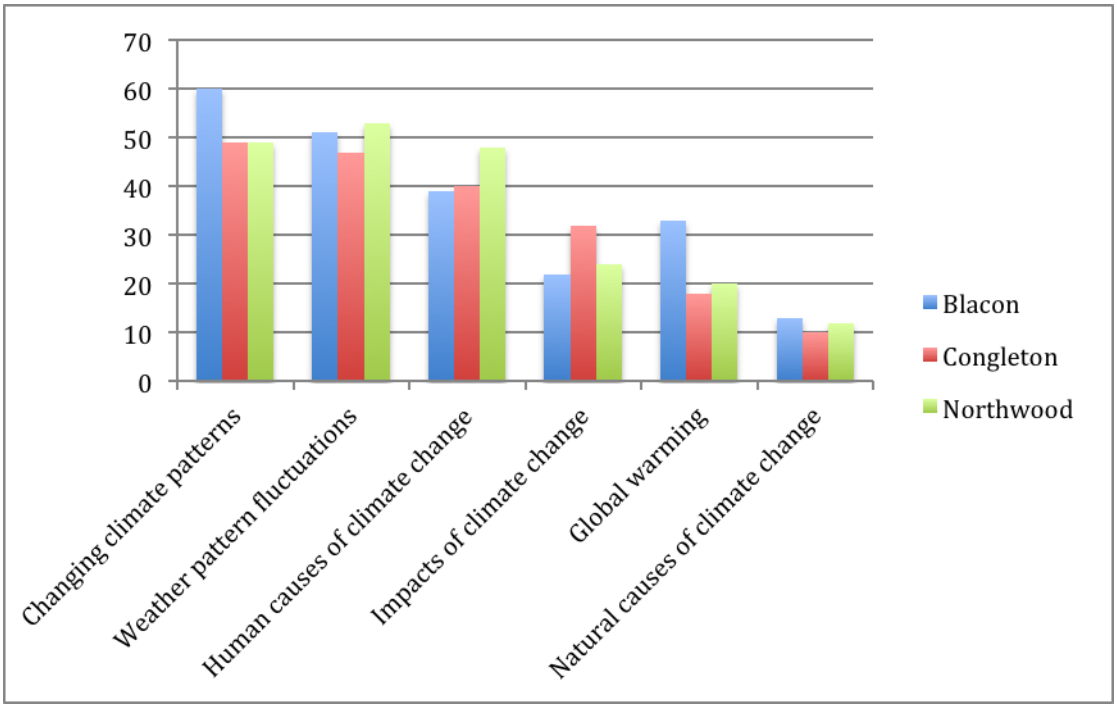


Figure 5.1: Understandings of the term "climate change"

The majority of respondents, when answering this question, took a very literal understanding of the term "climate change". Respondents indicated that the process of a shift or fluctuation in climate (*n*=158, 25.5%) and/or weather (*n*=151, 24.4%) was

fundamental in their understanding of what the term "climate change" constitutes. Such understandings are exemplified as follows:

> "[It's to] do with [the] climate changing" (BR5),
> "Climate is shifting and becoming warmer" (BR64),
> "A fluctuation in the climate system" (CR29),
> "Changing climate temperatures" (NR164).

Some respondents did provide detailed answers to these questions indicating a good understanding of the terminology:

> "The world's climate is changing considerably from what was previously recorded as normal" (NR19),
> "Where the temperature of the earth is either getting too warm or too cold due to fluctuation in temperature due to GHGs" (NR27).

A substantial proportion of respondents identified the human causes of climate change with respect to carbon emissions, pollution and society's actions towards the environment were integral to their understanding of the term: "The impact on the atmosphere as a result of human activities" (CR126) and "The change in the climate and the environment caused by GHG emissions (NR2). Where a substantial number of respondents mentioned the human impacts of climate change (*n*=127, 20.5%); a lower number of respondents cited natural causes (*n*=35, 5.7%). This finding reflects results from DEFRA (2009) and Whitmarsh (2009a) that the vast majority of people view climate change as a human-caused problem.

Box 5.2: Variation in understandings of "climate change"

Chi-squared analysis of survey responses reveals that:

- 79.5% of those who related human causes to their understanding of "climate change" believe that protecting the environment is important (x^2=57.832, df=10, p<0.000);
- Those who stated that climate change related to natural causes were unsure (25%), or did not believe (38.9%) that protecting the environment was important

(x^2=57.832, df=10, p<0.000);
- 54.6% of those who watch programmes with an environmental focus specified that their understanding of the term "climate change" related to changes or fluctuations in weather or climate (x^2=14.130, df=5, p<0.015);
- 36.2% of those employed full time were more aware of the human causes of climate change (x^2=56.260, df=25, p<0.000);
- There were no significant relationship between awareness and understanding of climate change with membership of environmental societies; readership of environmental magazines; education; age; or gender.

From this analysis, it is observed that human causes of climate change are associated with beliefs that protecting the environment is important. Conversely, those who identified natural causes were more likely to believe that environmental protection is not important. This indicates that beliefs about the causes of climate change are also influenced by attitudes towards environmental protection, suggesting that dissonant information is rejected if these are not aligned with pre-existing attitudes (Nickersen, 1998; Upham *et al.*, 2009).

Those who engage with environmental programmes understood that climate change resulted in fluctuations in global climate. Although not statistically significant, human causes were more likely to be identified by men (59.1%), those aged 36-55 (46.2%) and those educated at college level or above (53.6%), and are consistent with previous findings (Hargreaves *et al.*, 2003; Eurobarometer, 2009; Upham *et al*., 2009).

Focus group participants were also asked about their understanding of "climate change". The focus group data analysis is consistent with survey respondents' understandings of the term "climate change". Participants identified specific causes (carbon emissions and pollution) and consequences (melting glaciers and rising sea levels) of climate change, and provided more depth to their understanding of the terminology. For example, BP1 indicated that changing methods of energy production would minimise the causes of climate change:

> "Different fossil fuels that maybe we should be looking more at [nuclear] fusion like they're doing… in France, maybe if that works… look at… having a few of those around Europe, Asia and America" (BP1).

This comment transcends multiple themes, notably that understandings of climate change are predicated upon emissions from burning fossil fuels cause climate change (Norton and Leaman, 2004; Whitmarsh, 2009a). However, BP1 acknowledges that

alternative methods of energy production such as nuclear fusion would address climate change. Participants referred to the theme addressing climate change (often without explicitly knowing so) in numerous ways when discussing their perspectives. Subsequently, this was a crosscutting theme in the analysis of qualitative data. Other participants predicated their understanding based upon the impacts of climate change:

> "I… link climate change to… [melting of] the ice caps. I immediately think of the animals that are losing the habitats and things because the world is changing" (BP2).

BP2 identifies a specific impact of climate change; melting ice caps, and links this understanding with environmental concerns for, and the secondary impacts of melting ice caps from climate change on, animals and habitat destruction. This finding demonstrates that participants' understandings of the term "climate change" are not predicated on a single theme, and are often multifaceted (Whitmarsh, 2009a). Observation and experience of climate change were a salient theme:

> "We've just gone on holiday, we've come back from Iceland. There's three major glaciers that are there… and only one of them is actually increasing, the other two are decreasing at quite a rapid rate for a glacier" (BP3).

BP3's comment on their understanding of "climate change" is predicated on their experience of going on holiday and direct observation of the real-world impact climate change is presently having, evidenced by the remark that two of the glaciers BP3 saw were decreasing at "quite a rapid rate". Some participants suggested that their understanding of climate change was substantiated by evidence of the causes and impacts:

> "Photographs this year of [show] polar bears being stranded… because [of] the ice caps. One newspaper showed the same area… last year and the ice doesn't

cover as much area this time around as what it did last year. So there's a direct comparison, in a twelve month period" (NP1),

"All you have to do is go on Google Images and then you can see images of… the sea level… in 10-20 years time and you see places like London, New York, Los Angeles, San Francisco that are all on the coast and they're just going to disappear. You're going to have to rehome millions of people and there's no space" (NP4).

The remarks by NP1 and NP4 also demonstrate that their understanding of climate change is based upon those participants who had, to some extent, explored an aspect of the issue for themselves; and their awareness of the impacts of climate change are reinforced by information from varied sources (newspapers and the Internet). This result reinforces the assertion in Section 5.4 that regularly hearing about climate change related information from various sources increases cognitive engagements with the issue (McKenzie-Mohr and Smith, 1999). Yet, their awareness and understanding is not just limited to the UK but has a global scope, reflected in the remarks by NP4 above. Participants understanding of the impacts of climate change were also related to recent natural disasters:

"We've already seen [flooding and sea level rise] in New York… that probably in my opinion, is global warming" (NP2),

"…and look at the devastation that caused" (NP1).

Abnormally warm sea surface temperatures off the East Coast of the USA, to which climate change contributed, strengthened the intensity of the hurricane (Trenberth, 2012). This reference to Hurricane Sandy demonstrates that participants are either aware of the relationship between the intensity of natural disasters and climate change, or have attributed the intensity of this particular natural disaster to climate change.

5.3.1.2. Awareness and understanding of "carbon reduction"

When asked what they understood the term "carbon reduction" to mean, respondents were specific in their choice of words when answering this question and related to a specific aspect of carbon reduction (i.e. carbon footprints; environmental impact; climate change; and energy). It is for this reason that although these answers may appear to be similar, they were assigned different codes as exemplified in Table 5.3.

Table 5.3: Understanding of the term "carbon reduction"

Theme	Blacon	Congleton	Northwood	Total
(Generally) Reducing pollution/carbon emissions	87 (40.1%)	108 (55.1%)	110 (53.4%)	305 (49.3%)
Don't know/not sure	59 (27.2%)	14 (7.1%)	21 (10.2%)	94 (15.2%)
Use less or use alternative sources of energy	20 (9.2%)	22 (11.2%)	29 (14.1%)	71 (11.5%)
Reducing your environmental impact	16 (7.4%)	27 (13.8%)	19 (9.2%)	62 (10%)
Reducing carbon footprints i.e. individual/household	20 (9.2%)	15 (7.7%)	17 (8.3%)	52 (8.4%)
Change the way we live (behaviour/lifestyle change)	15 (6.9%)	10 (5.1%)	10 (4.9%)	35 (5.7%)
Total	*n*=217 (100%)	*n*=196 (100%)	*n*=206 (100%)	*n*=619 (100%)

The most common responses related to reducing carbon emissions and/or pollution (*n*=288, 46.5%). Respondents did not further exemplify what they meant or provided examples. For example: "reducing the amount of carbon in the atmosphere" (BR25), "reducing the levels of pollution in the air" (CR51) and "minimising pollution levels in the atmosphere" (NR126). Interestingly, the second most common response, was that respondents did not know or were unsure of what the term "carbon reduction" meant. The term "carbon reduction" is not a commonly used term in most media outputs and familiarity with this term is therefore lower than recognition, and understanding of, "climate change" (Boykoff and Boykoff, 2007; Whitmarsh, 2009a). Other responses that residents cited in terms of their understanding of "carbon

reduction" were more specific, including using less or alternative sources of energy and behavioural/lifestyle change(s).

Table 5.3 also demonstrates that respondents identify that carbon reduction is related to notions of scale and responsibility. In some ways, responses to this question can be placed on a local-global continuum. Responses related to using less energy or alternative sources of energy related to national and global level responses: "reducing emissions by burning less fossil fuels" (BR80), "using different energy sources" (BR129), "reducing our reliance on fossil fuels such as coal" (CR37) and "not using fossil fuels for energy generation" (NR143). Respondents also identified action relating to reducing carbon footprints and 'their' environmental impact: "reducing your impact on the environment" (BR210), "lessening the carbon footprint made by mankind" (CR114) and "reducing our environmental impacts" (NR137).

A minority of respondents particularly highlighted that changing their way of life through behavioural change could reduce carbon emissions: "changes in behaviour to lower carbon emissions people produce" (BR78), "changing the way we live to become more environmentally friendly" (BR84), "reducing our intensive way of life" (CR30) and "changing the way we live" (NR141). These comments illustrate that when considering addressing climate change, they associate this with impacts on their way of life. Conversely, for the majority of individuals, this highlights that many do not feel that climate change poses an imminent threat to themselves and are reluctant to significantly alter their lifestyle (Kempton, 1991). This may suggest that respondents do not associate their own actions as contributing to, or solving, climate change (Upham *et al.*, 2009).

Whilst discussing carbon reduction, particularly lifestyle changes, some respondents used particular words and language to place a certain negative element on this response: "making sacrifices to your lifestyle" (CR74), "whatever is involved in it [carbon reduction], we don't need to do it" (CR187) and "changing the way we live to suit the environment" (CR192). This finding illustrates a level of resistance from a

personal stance towards addressing climate change. Although respondents did not state the reasons why for these opinions, these attitudes towards addressing climate change are striking.

Chi-squared analysis reveals that there are highly significant relationships between understandings of the term "carbon reduction" with demographic variables (Box 5.3).

Box 5.3: Variation in understandings of "carbon reduction"

Chi-squared analysis of survey responses reveals that:

- Respondents who believe that protecting the environment is important were more likely to state that "carbon reduction" related to reducing individual/household emissions (90.4%); reducing your environmental impact (90.3%); using alternative sources of energy (84.5%) and changing the way people live (68.6%) (x^2=123.445, df=10, p<0.000);
- Those who believe that protecting the environment is not important (52.4%; x^2=123.445, df=10, p<0.000) stated that they were unsure of the definition of "carbon reduction);
- 51% of those who read environmental magazines (x^2=19.148, df=5, p<0.002) indicated that carbon reduction related to minimising pollution and the causes of climate change; and 52.3% of those who watch environmental programmes (x^2=25.243, df=5, p<0.000) indicated that carbon reduction related to minimising pollution and the causes of climate change;
- Across the employment levels (x^2=127.713, df=25, p<0.000), those employed full time (51.5%); part time (51.9%); retired (54.4%); or students (60.5%) were more likely to specify that their understanding of "carbon reduction" related to (generally) reducing carbon emissions/pollution; a pattern matched across all age ranges;
- 42.3% of those employed full time (x^2=127.713, df=25, p<0.000) and 76.3% of those aged 26-55 (x^2=61.625, df=25, p<0.000) were more likely to state that using alternative sources of energy reflected their understanding of "carbon reduction";
- 34.3% of those employed part time (x^2=127.713, df=25, p<0.000) and 65.7% of those aged between 26-45 (x^2=61.625, df=25, p<0.000) were more likely to state that the term "carbon reduction" related to behavioural/lifestyle changes;
- Chi-squared analysis indicated that there were no significant relationship between awareness and understanding of carbon reduction with education or gender.

This analysis indicates that those who believe environmental protection to be important were more likely to define carbon reduction, in some cases identifying specific methods to address climate change. This demonstrates that those with pro-environmental attitudes have heard, and can provide a definition, of "carbon

reduction", suggesting greater engagement amongst these respondents. Similarly, higher proportions of those who identified they engage with environmental magazines and programmes are more likely to indicate their understanding of "carbon reduction" related to minimising pollution and the causes of climate change. This finding demonstrates that those engaged with environmental issues are more likely to have heard about, and understand, the term "carbon reduction".

Those aged between 26-55 were more likely to indicate that changes to behaviour and using alternative forms of energy reflected their understanding, with the under-25 and over-66 age groups less aware of the term and its definition. These findings are consistent with other studies (Upham *et al.*, 2009).

Although not statistically significant, men (59.2%) and those educated to college level and above (59.1%) were more likely to define "carbon reduction" as using alternative sources of energy. This suggests that those with more formal education and gender have higher awareness and understanding of "carbon reduction" (Anker-Nilssen, 2003).

Focus group participants were also asked to expand upon, and provide detail to, their understandings of "carbon reduction". Participants, consistent with the survey responses, identified a range of approaches to reduce carbon emissions, and by extension addressing climate change. CP1 stated that their understanding of carbon reduction was a literal meaning of "trying to reduce our carbon footprint". CP4 indicated that taking action, reducing personal transport and engaging younger generations in taking action would reduce carbon emissions:

> "The first that that comes to mind is using your car… so it's cutting down. With us at school, getting the kids to come on bikes or walk to school [helps]. So we do "walk to school" and stuff" (CP4).

CP4 demonstrates that their understanding of carbon reduction relates to minimising the use of possessions (i.e. cars) causing pollution, and indicates that carbon reduction centres on taking action, in this example "walk to school" schemes. The understanding of carbon reduction by CP4 is predicated on experiences during their career. This demonstrates that everyday projects (e.g. educational schemes) influence the understanding of, and attitudes towards, carbon reduction.

BP1 and BP2 indicated, and discussed, creating more electric cars; improving the infrastructure to charge electric cars; and generating energy from waste would help to minimise carbon emissions:

> "Using… the fumes from factories… to use that to power… turbines to create more energy out of the energy they're producing… and maybe look at improving electric cars and putting more electric charges points in" (BP1),
> "That's a good idea… what puts a lot of people off is the fact that if you run out… there's no charge point" (BP2).

BP1 understands carbon reduction to be a range of approaches at the national level, looking to improve the infrastructure that supports sustainable energy production and transport. BP2 concurs with BP1 and comments that one of the barriers to purchasing an electric vehicle is the limited, or no, number of charging points (Egbue and Long, 2012). NP5 suggested that investment to green companies to encourage a green economy would help reduce carbon emissions:

> "They should probably invest, the government… [to] give money to green firms to encourage a green market" (NP5).

At a national level, NP5 suggests that there should be financial investment in companies that seek to alter the current paradigm of economic growth to a green economy, which at its core would address climate change. This finding relates to Jackson's (2011) assertions that investments should replace the current economic paradigm of relentless consumption growth with developing a new macro-economics for sustainability.

Participants understanding of "carbon reduction" reflected their awareness, and identification, of multiple methods of reducing carbon emissions. However, participants also identified that there were difficulties in carbon reduction, e.g. infrastructural changes required for electric cars (Egbue and Long, 2012). Although some participants identified personal actions including "public transport and cycling"

(NP5) and “recycling” (BP4), participants understanding of “carbon reduction” reflected a diverse range of actions that would significantly reduce carbon emissions. Such actions include green investment; changes to infrastructure; reducing the use of cars; and engaging younger generations to act sustainably in schemes designed to raise awareness and change behaviours. This suggests that participants consider personal action to be a key component of understanding “carbon reduction”. This finding is not consistent with survey respondents who indicate reluctance to suggest personal lifestyle changes. Yet the personal actions cited are not those with the largest impact to address climate change.

These findings illustrate what the public understand by, and predominantly consider when they think of, the terms “climate change” and “carbon reduction”. Public understanding of “climate change” in this study was predicated on an awareness of the causes, consequences and processes of climate change. Moreover, qualitative data highlighted that understanding of the term was related to observation and direct experience, as well as engaging with sources of information relating to the impacts. Recognition of the term “carbon reduction” was much lower than “climate change”, however, understanding of the phrase related to a multitude of approaches, ranging from individual to national changes in behaviour, infrastructure and energy sources to reduce carbon emissions, consistent with other surveys (DEFRA, 2007).

These results demonstrate that participant understandings of the term “climate change” and “carbon reduction” are not predicated on a single theme, but are multifaceted. These findings validate the use of a mixed methods design and highlight that providing participants with more time allows for an in-depth understanding of respondents’ perceptions of (addressing) climate change.

5.3.2. Awareness and understanding of the causes and consequences of climate change

5.3.2.1. Awareness and understanding of the causes of climate change

Respondents were asked what they considered to be the main causes of climate change, and identified 6 main causes. Respondents were specific in their choice of words when identifying causes of climate change and related to a specific cause (including pollution; burning fossil fuels; and industry). It is for this reason that although these answers may appear to be similar, they were assigned different codes as exemplified in Figure 5.2.

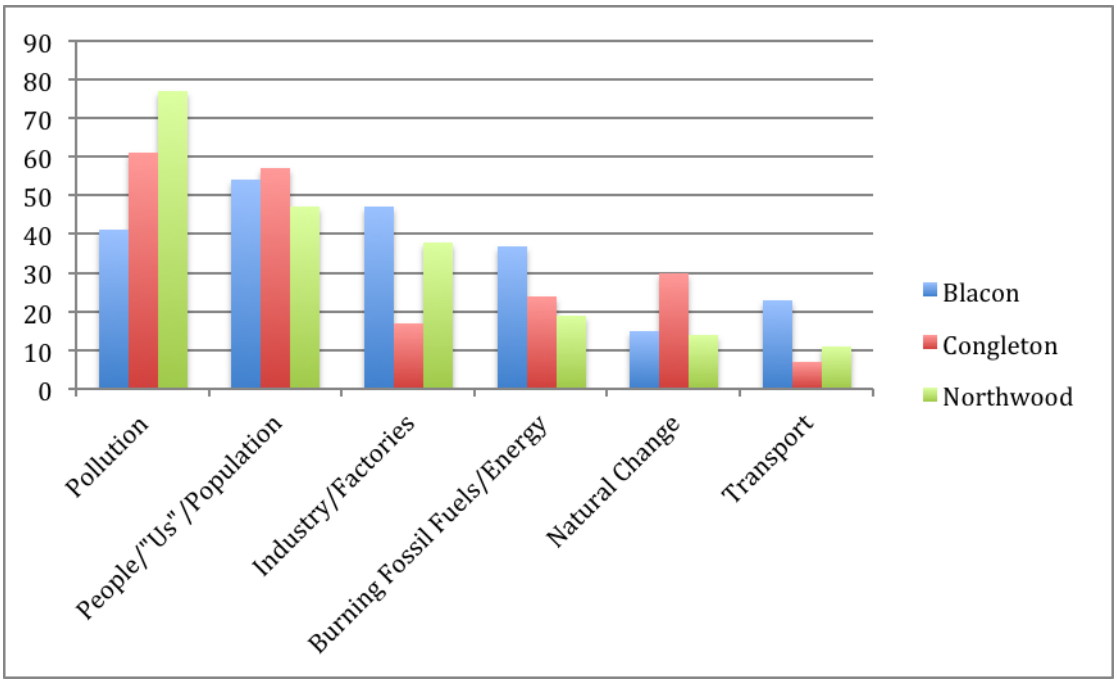


Figure 5.2: Identified causes of climate change

Of the main causes identified by respondents illustrated in Figure 5.2, most relate to human activity, including pollution or blamed upon society and people in general. 90.5% of responses relate to anthropogenic causes, compared to 9.5% relating to natural causes of climate change. The most common answer was pollution (*n*=179, 28.9%). This result is consistent with other studies that respondents identify pollution to be the main cause of climate change (Whitmarsh, 2009a), and with

findings in Section 5.3.1.1 that the most common cause of climate change was pollution.

While understanding the contribution of pollution and burning fossil fuels to climate change, the second most common response related to human activity and that people (or society) were to blame for causing climate change (*n*=158, 25.5%). It is interesting to note that respondents use the word "us", when referring to human activity and it's contribution towards climate change. This finding suggests a level of personal and collective responsibility for the causes of climate change (Lorenzoni and Langford, 2005; Uzzell, 2010). This is inconsistent with previous research as most people lay responsibility for addressing climate change with governments, other countries or industries.

Respondents identified a multitude of human causes more than natural causes. Those that identified climate change as not being caused by human activity stated that the causes were natural causes (*n*=59, 9.53%): "natural causes like volcanoes" (BR159) or "natural changes to the earth" (CR114) or caused by "the Sun" (NR141). These results are consistent with those of Downing and Ballantyne (2007) who found that 9% of respondents considered climate change a purely natural phenomenon.

Particular sources of emissions were identified, attributing the causes of climate change to particular sectors, including industry (*n*=102, 16.5%) and transport (*n*=41, 6.6%): "planes, trains and cars" (BR23), "fumes from transportation like cars and buses" (CR97) and "industrialisation" (NR162). Respondents in Congleton identified more natural causes than respondents in Blacon or Northwood whereas those respondents stated that industry was a major cause of climate change. This may be, in part, due to Blacon and Northwood, particularly, having historical connections with industry.

Respondent's related causes of climate change to moral concerns about contemporary society and suggest a normative dimension, consistent with other studies (Whitmarsh, 2009a). Overpopulation was cited as a cause of climate change:

"the world can't sustain that many people […] polluting" (CR131) and "too many people in the world using too many resources" (CR152). These comments reflect respondents concern that overpopulation is not only a cause of climate change but exacerbates global carrying capacities (Middleton, 2003). The response by CR131 indicates that some respondents feel that the climate can only support so many people, in a world where energy intensive lifestyles are an aspiration and development goal. A small proportion of respondents in Blacon identified the causes of climate change to be attributed with developed countries, particularly "the Western World" (BR121) and "Americans" (CR108) in an attempt to assign responsibility for the issue (Norton and Leaman, 2004; Lorenzoni and Langford, 2005).

Box 5.4: Variation between understandings of the causes of climate change

Chi-squared analysis of survey responses reveals that:

- Those who believe protecting the environment is important were more likely to state that pollution (29.3%) and people (28.6%) were the causes of climate change (x^2=76.897, df=10, p<0.000);
- Those who believe that protecting the environment is not important were more likely to state that natural changes (33.3%) and industry (17.5%) were the main causes of climate change (x^2=76.897, df=10, p<0.000);
- 30.6% of those that read environmental magazines were more likely to mention pollution as the main cause of climate change (x^2=19.101, df=5, p<0.002);
- 30.6% of those that watched programmes with an environmental focus were more likely to mention pollution as the main cause of climate change (x^2=32.534, df=5, p<0.000);
- 29.9% of those who are in full time employment were also more likely to mention pollution as the main driver of climate change, whereas 47.4% of students were more likely to identify people (x^2=53.721, df=25, p<0.001);
- Compared to the total sample, the proportion of those respondents who stated the main cause of climate change was pollution is significantly higher amongst those aged 56 and above (29%), whereas those who identified natural changes were more likely to be those aged 26-45 (52.5%) (x^2=57.031, df=25, p<0.000);
- There were no significant relationships between awareness of the causes of climate change with education or gender.

From this analysis, it is clear that understanding of the causes of climate change is related to environmental attitudes, few demographic variables and engagement with sources of information. The analysis indicates that those who believe protecting the environment to be important; engage with environmental programmes and magazines; aged 56 or over; and employed full time were more likely to suggest that pollution is the main cause of climate change. Conversely, those who believe that

protecting the environment; and aged between 26-45 were more likely to indicate natural causes. These findings are broadly consistent with previous findings, indicating that those with higher incomes are more aware of climate change and its causes (DEFRA, 2007; Eurobarometer, 2009). However, those aged 56 or over identified were aware that pollution was a main cause of climate, inconsistent with previous studies indicating that awareness of the causes of climate change is generally lower amongst the under-25 and over-65 age groups (Hargreaves *et al.*, 2003; Upham *et al.*, 2009).

Although not statistically significant, those educated to college level and above were more likely to identify pollution or people as the main causes of climate change, consistent with previous findings that those with higher levels of formal education are more aware of the causes of climate change (Anker-Nilssen, 2003; DEFRA, 2007; Upham *et al.*, 2009; Whitmarsh, 2009a). Additionally, men are more likely to identify pollution as a main cause of climate change (29.3% and 28.5% respectively).

5.3.2.2. Awareness and understanding of the impacts of climate change and respondents evaluations

There is an inherent assumption that climate change will result in overwhelmingly negative consequences (Houghton, 2009). Evaluations of climate change go far beyond simply stating the positive and negative environmental impacts. It has been stated that climate change can have positive impacts environmentally, socially and economically (Houghton, 2009). Exploring how the public perceive the positive and negative outcomes also relate to how people evaluate climate change, and the impact it may/will have on their way of life. Therefore, an additional method of ascertaining the public's level of understanding of (addressing) climate change was to ask respondents what the positive and negative outcomes of climate change are (Table 5.4).

Table 5.4: Positive and negative consequences of climate change identified by survey respondents

Positive consequences	Blacon	Congleton	Northwood	Total
None	74 (34.1%)	82 (41.8%)	97 (47.1%)	253 (40.9%)
Warmer weather/nicer climates	78 (35.9%)	38 (19.4%)	62 (30.1%)	178 (28.8%)
Reduce climate change (through behaviour change or using alternative energy sources)	18 (8.3%)	47 (24%)	23 (11.2%)	88 (14.2%)
Don't know/not sure	29 (13.4%)	8 (4.1%)	15 (7.3%)	52 (8.3%)

Increased awareness of actions on the environment	18 (8.3%)	21 (10.7%)	9 (4.4%)	48 (6.7%)
Total	*n*=217 (100%)	*n*=196 (100%)	*n*=206 (100%)	*n*=619 (100%)
Negative consequences	**Blacon**	**Congleton**	**Northwood**	**Total**
Extreme/unpredictable weather/natural hazards	56 (25.8%)	61 (31.1%)	62 (30.1%)	179 (28.9%)
Sea level rise and/or melting ice caps	34 (15.7%)	49 (25%)	44 (21.4%)	127 (20.5%)
Negative environmental impacts	24 (11.1%)	29 (14.8%)	42 (20.4%)	95 (15.3%)
Global warming/warmer weather	19 (8.8%)	13 (6.6%)	19 (9.2%)	51 (8.2%)
Economic impacts	20 (9.2%)	19 (9.7%)	11 (5.3%)	50 (8%)
Don't know/not sure	22 (10.1%)	1 (0.5%)	9 (4.4%)	32 (5.2%)
None	19 (8.8%)	9 (4.6%)	4 (1.9%)	32 (5.2%)
Negative health impacts	6 (2.8%)	9 (4.6%)	13 (6.3%)	28 (4.5%)
Social impacts	17 (7.8%)	4 (3.1%)	2 (1%)	25 (2.6%)
Total	*n*=217 (100%)	*n*=196 (100%)	*n*=206 (100%)	*n*=619 (100%)

The majority of respondents (*n*=253, 40.3%) did not identify any positive outcomes of climate change. The positive outcomes respondents did identify were associated with warmer temperatures and weather (*n*=178, 28.8%) and advantages for people addressing climate change (*n*=136, 20.1%) (through behavioural/lifestyle change and/or using alternative sources of energy). This finding demonstrates that respondents consider behavioural responses addressing climate change to be a positive notion, yet contradicts findings in Section 5.3.1.2 suggesting there is resistance to addressing climate change. This suggests that there are numerous attitudes towards addressing climate change (Section 5.5.2). A small minority of respondents stated that they were unsure about the positive consequences (*n*=52, 8.3%).

Respondents noted that the dominant negative consequences were mainly environmental impacts for example, extreme or unpredictable weather including "more hurricanes" (CR136) and natural hazards like flooding and heatwaves (*n*=179, 28.9%), and sea level rise and/or melting ice caps (*n*=127, 20.5%). A further 51 (8.2%)

respondents indicated that warmer temperatures related to global warming was also a negative consequence. These impacts are frequently stated in government campaigns and media reports about climate change, and are consistent with other surveys relating to understanding of climate change causes and consequences are commonly cited impacts (DEFRA, 2009; Whitmarsh, 2009a; Capstick *et al.*, 2013). Respondents also indicated that they consider the economic impacts of climate change, involving "prices will go up, more taxes" (BR29); negative health impacts including "pollution means that people will have difficulty breathing" (CR71); and also displacement or migration will result involving "people will have to move because of natural disasters" (NR7). Looked at more closely, respondents noting the economic impacts of climate change indicated that these resulted in response to climate change being addressed. Such responses are exemplified in the following quotes:

> "Costs associated with action to do something about it" (CR28),
> "[It] Will cost taxpayers money to sort it out" (CR93),
> "[The] Government will charge us to sort it through taxes (CR96),
> "Have to pay more tax to sort it [climate change] out" (NR123),
> "Prices will go up on everything" (NR153).

Those who mentioned economic impacts (*n*=50, 8%) may reflect the importance of financial concerns to individuals (Eurobarometer, 2009). This may be indicative of the time at which the survey was undertaken where the Coalition Government were passing austerity measures and that respondents consider the economic impact of environmental issues. Previous studies related to public perspectives on environmental issues during times of economic difficulty have shown that attitudes have altered, and changed the way people consider environmental issues such as climate change (Rosen, 1981). These responses indicate that whilst noting that climate change should be addressed, respondents also suggest that there were (perceived) economic impacts that would directly impact upon them (as a result).

Box 5.5: Variation between understandings of the positive and negative consequences of climate change

With respect to the positive consequences of climate change, chi-squared analysis of survey responses reveals that:

- Respondents who stated reducing the causes of climate change (through behaviour change and alternative energy sources) were more likely to read environmental magazines (48.9%; x^2=25.879, df=4, p<0.000), and watch programmes with an environmental focus (62.5%; x^2=48.121, df=4, p<0.000);
- Those who believe that protecting the environment is important were more likely to believe that there were no positive consequences of climate change (45%), whereas those who believe that protecting the environment is not important were more likely to state that warmer weathers/nicer climates (47.6%) were the positive outcomes of climate change (x^2=111.482, df=8, p<0.000);
- Responses relating to increased awareness of actions on the climate (93.8%) and addressing climate change through behaviour or lifestyle changes (95.5%) were more stated more by those who believe protecting the environment is important (x^2=111.482, df=8, p<0.000);
- Those who were unsure about the positive consequences were more likely to be those who were not members of environmental societies (90.6%; x^2=14.643, df=4, p<0.006); did not read environmental magazines (81.1%; x^2=25.879, df=4, p<0.000); and did not watch environmental programmes (81.1%; x^2=48.121, df=4, p<0.000);
- Of those who stated that reducing the causes of climate change resulting in action to address the issue (either behavioural or technical measures) were more likely to be those who were educated to further education level and above (70.5%; x^2=28.208, df=16, p<0.030); employed full time (59.1% x^2=74.512, df=20, p<0.000) and aged 36-55 (63.7%; x^2=40.218, df=20, p<0.005);
- Those who were unsure about the positive consequences were more likely to be educated up to secondary level (x^2=28.208, df=16, p<0.030); and aged 26-45 (54.7%; x^2=40.218, df=20, p<0.005).

With respect to the negative consequences of climate change, chi-squared analysis reveals that:

- There are highly significant relationships between the identified negative consequences of climate change with readership of environmental magazines (x^2=25.879, df=4, p<0.000) and viewership of environmental programmes (x^2=48.121, df=4, p<0.000);
- Respondents who believe that the negative consequences of climate change relate to extreme/unpredictable weather or natural hazards (81.6%); sea level rise and melting ice caps (82.7%); negative health impacts (89.3%); and negative environmental impacts (on habitats and animals) (94.7%) were more likely to be those who believe protecting the environment is important (x^2=174.578, df=16, p<0.000);
- Those who believe that protecting the environment is important were more likely to state that extreme/unpredictable weather or natural hazards (31.9%) and sea level rise and melting ice caps (22.9%) were negative consequences of

climate change, whereas those who do not believe that protecting the environment is important were more likely to state that there were no negative consequences (22.2%) or that climate change resulted in increases in economic impacts such as taxes (17.5%) (x^2=174.578, df=16, p<0.000);

- Those who were unsure about the negative consequences of climate change were more likely to be unsure about whether protecting the environment is important (53.1%; x^2=174.578, df=16, p<0.000);
- Chi-square analysis indicates that a higher proportion of respondents who read environmental magazines were more likely to state that extreme weather events and natural hazards (30.6%); sea level rise (22.4%) and environmental impacts (23%) were negative consequences of climate change. Additionally, this pattern also mirrors viewership of environmental programmes with those indicating that extreme weather events and natural hazards (29.4%); sea level rise (21.4%); and environmental impacts (25.7%) were negative consequences of climate change.

It is clear that identification of positive and negative consequences is related to socio-demographic values; engagement with sources of information; and environmental attitudes. Principally, those who believe that protecting the environment is important; engage with environmental magazines and programmes; and those educated to further education level and above were more likely to suggest that the positive consequences of climate change related to the positivities of taking action to address the issue (through behaviour changes and alternative sources of energy), and identify substantial negative climatic, environmental and social consequences. Conversely, those who believe that environmental protection is not important and educated up to secondary level were more likely to suggest that climate change resulted in warmer weather as a positive consequence, and indicate that there were no negative consequences. These findings are consistent with previous findings suggesting that socio-demographic values are indicators of awareness and understandings of the impacts of climate change (DEFRA, 2007; Eurobarometer, 2009; Upham *et al.*, 2009).

Respondents identified that a positive outcome of climate change was changing behaviours to address the issue; increased awareness of people's actions on the environment; and opportunities to address the issue including using less carbon intensive forms of energy generation. In comparison to previous studies (Whitmarsh, 2009a) where no respondents identified solutions to climate change, respondents

clearly identified that there is a need to address climate change. This finding indicates that the issue of climate change has moved beyond being 'just another environmental issue' to one that resonates with the public to the extent that it should be addressed.

Illustrated in Table 5.4, respondents identified more negative outcomes of climate change than they did positive consequences. This may be due to government campaigns, and media reporting, of climate change and how such reporting of the impacts of climate change attempt to shock people into transitions of pro-environmental behaviour (Sturgis and Allum, 2004; Boykoff and Boykoff, 2007; O'Neill and Nicholson-Cole, 2009; Moloney *et al.*, 2010; POST, 2010; Whitmarsh, 2011).

5.4. SOURCES OF INFORMATION AND FREQUENCY OF ENGAGING WITH (ADDRESSING) CLIMATE CHANGE

The survey also sought to explore where respondents most commonly hear or learn about climate change related topics, and the frequency to which they hear about topics related to climate change and the degree to which they discuss such issues. Respondents were asked to note the main sources of information relating to climate change topics (Figure 5.3).

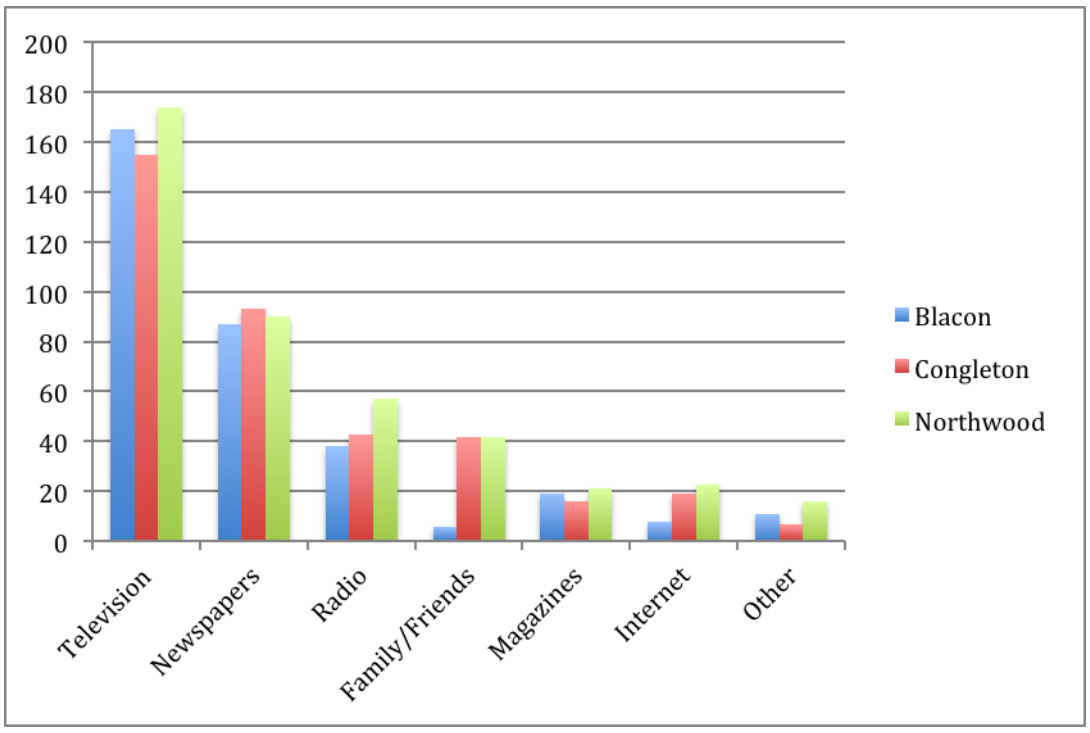


Figure 5.3: Respondents scources of information for climate change related issues

By far the most common sources of information noted by respondents were mass media: television (*n*=494), newspapers (*n*=270) and radio (*n*=138), consistent with previous studies (Whitmarsh, 2009a). The Internet (*n*=50) and 'other' sources of information including TV adverts and information leaflets (*n*=34) are amongst the least common sources of climate change related information. In previous studies respondents mentioned journals, libraries and scientists as sources of climate change related information, however results from this survey indicate that respondents do not gain information relating to climate change from these sources. Previous studies have indicated that scientists are considered the most trusted sources of information (DEFRA, 2009; Whitmarsh, 2009a). It is not clear from the results of this study whether information from scientists is mediated through another source of information (i.e. television programmes or newspapers). The fourth most common source of climate change related information noted by respondents is family and friends. This signifies that some respondents (Blacon: *n*=6; Congleton: *n*=42; Northwood: *n*=42) are discussing (addressing) climate change implying that to an extent, they are engaged in the subject (whether positively or negatively). The lower

numbers in Blacon could point to a lack of interest in the subject or meaningful engagement with (addressing) climate change discussions.

Regularly hearing particular information, in this context related to climate change, can trigger associated cognitive, affective and behavioural responses and affect the frequency of such reactions (McKenzie-Mohr and Smith, 1999). For example, "if you watch a documentary on global warming, and subsequently discuss it, the conversation you have may convince you to make your home more efficient" (McKenzie-Mohr and Smith, 1999: 96). The survey thus sought to explore the frequency to which respondents hear about climate change related information. Following this, respondents were asked about the frequency to which they hear about climate change related information (irrespective of the source) (Figure 5.4).

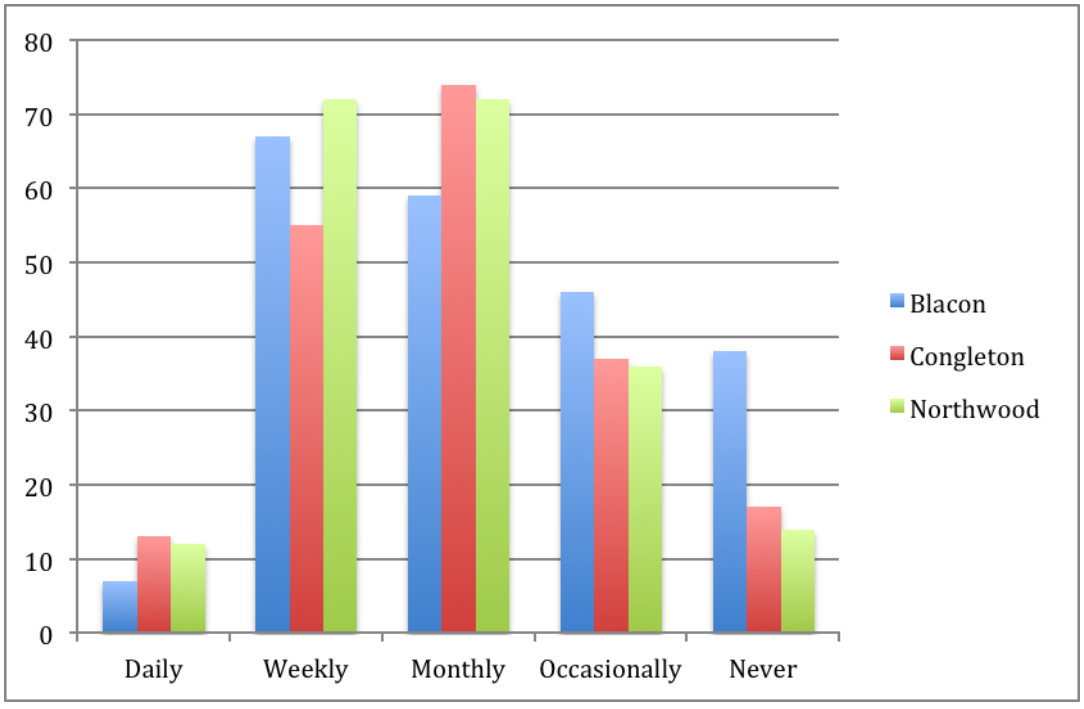


Figure 5.4: Frequency to which respondents hear about climate change related topics

It could be argued that regularly hearing about, and discussing, (addressing) climate change related topics could be related to measuring the extent to which respondents are engaging with the subject. Essentially, these questions and their responses

indicate the level to which respondents are actively engaged with (addressing) climate change. The vast majority of respondents hear or learn about climate change related information on a monthly (*n*=205, 33.1%) or weekly (*n*=194, 31.3%) basis, from a multitude of sources (Figure 5.3). Consequently, respondents are subjected to a high degree of climate change information from these sources. However, only 32 respondents (5.2%) heard about climate change on a daily basis.

Box 5.6: Variation between the frequency to which respondents hear about climate change information

Chi-squared analysis reveals that:

- 81.3% of those who hear about climate change related information on a daily basis, and 93.3% on a weekly basis, are those who believe that protecting the environment is important (x^2=99.302, df=8, p<0.000);
- Those who believe protecting the environment were more likely to hear about climate change on a weekly basis (39.5%), whilst those who believe that protecting the environment is not important were more likely to never hear about climate change related information (31.7%) (x^2=76.897, df=10, p<0.000);
- The proportion of those respondents who stated they more frequently hear of climate change related topics, on a daily-weekly basis, is significantly higher amongst those who identify the human causes of climate change (41.7%; x^2=47.435, df=20, p<0.001) as their understanding of the term "climate change";
- A significantly higher proportion of those respondents who stated they more frequently hear of climate change related topics on a daily-weekly basis are more likely to indicate that human activity are the main cause of climate change (45.5%; x^2=58.707, df=20, p<0.000).

Chi-squared analysis indicates that proportion of those respondents who stated they more frequently hear of climate change related topics, on a daily-weekly basis, is significantly higher amongst:

- Respondents who hear or learn climate change related information from radio (65.2%; x^2=66.050, df=4, p<0.000); newspapers (57%; x^2=102.408, df=4, p<0.000); and family and friends (52.8%; x^2=21.631, df=4, p<0.000);
- Members of environmental societies (57%; x^2=20.498, df=4, p<0.000);
- Respondents who read environmental magazines (50.9%; x^2=33.014, df=4, p<0.000);
- Respondents who watch programmes with an environmental focus (52.3%; x^2=46.467, df=4, p<0.000);
- Those educated at college level and above (36.5%; x^2=53.179, df=16, p<0.000)
- Those employed full time (46.4%; x^2=76.514, df=20, p<0.000);
- Those aged 46-55 (46.9%).

Conversely, chi-squared analysis also indicates that respondents who never hear about climate change related topics are higher amongst those who are unemployed

(36.2%; x^2=76.514, df=20, p<0.000) and those aged 18-35 (59.4%; x^2=74.720, df=20, p<0.000).

Chi-squared analysis indicates that those who believe that environmental protection is important are more likely to hear about climate change related information on a daily-weekly basis, whereas those who do not believe that protecting environment is important were more likely to indicate they never hear about climate change related information. This may indicate levels of interest amongst respondents towards climate change; their engagement with such information; and the importance it has in their own lives or society in general (Lorenzoni and Langford, 2005). This point may be justified by those indicating human activities as their understanding of the term "climate change" and as a cause of climate change are more likely to indicate they hear climate change related information on a regular basis, thus indicating a higher level of engagement and understanding of the issue (Section 5.3). Again, the analysis further substantiates this point indicating that members of environmental societies and those who engage with environmental programmes and magazines are more likely to hear about climate change on a daily-weekly basis. Additionally, those who hold higher levels of formal education, employed full time and aged 46-55 are more likely to hear about climate change on a daily-weekly basis. These findings may suggest that those who regularly engage with climate change information reflect levels of awareness of, and concern for, climate change (Anker-Nilssen, 2003; DEFRA, 2007; Eurobarometer, 2009; Upham *et al.*, 2009).

Residents were also asked about the extent to which they discuss climate change with others. Regularly discussing particular information, involving (addressing) climate change can influence cognitive, affective and behavioural responses with the subject, and influence a person's attitude towards the issue (McKenzie-Mohr and Smith, 1999). Additionally, regular discussions about (addressing) climate change may also indicate the extent to which respondents are engaged with the issue. The questionnaire thus sought to explore the frequency to which respondents discuss climate change related information (Figure 5.5).

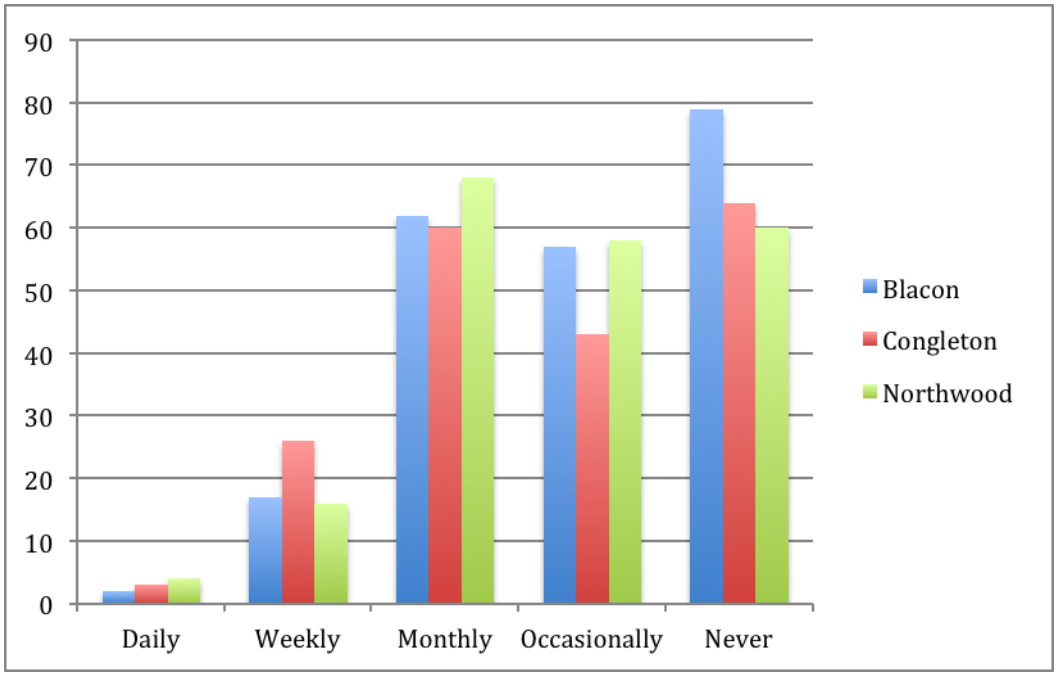


Figure 5.5: Frequency to which respondents discuss climate change related topics

Figure 5.5 illustrates that respondents are not discussing (addressing) climate change related information on a regular basis (*n*=203, 32.8%). Conversely, few respondents discuss (addressing) climate change on a daily (*n*=9, 1.5%) or weekly (*n*=59, 9.5%), however respondents do discuss climate change on a monthly (*n*=190, 30.7%) or occasional (*n*=158, 25.5%) basis. Looked at closely respondents do discuss climate change, albeit on an infrequent basis.

On the basis of learning about and discussing climate change information leads to increased levels of engagement with the subject amongst residents, with respect to individual communities it appears that respondents in Northwood are more engaged with (addressing) climate change, whilst respondents in Congleton are the least engaged. Taking the two most common answers that indicate that respondents do hear about climate change information (on a monthly and weekly basis) it is observed that individuals in Northwood hear about climate change related topics (*n*=144, 70%) more than respondents in Congleton (*n*=129, 65.9%) and Blacon (*n*=126, 58.1%). Again, taking the two most common answers that affirm respondents discussing climate change related topics (on a monthly and occasional basis) respondents in Northwood (*n*=126, 61.2%) are more engaged with discussions

about (addressing) climate change than respondents in Blacon (*n*=119, 54.9%) and Congleton (*n*=103, 52.5%).

Box 5.7: Variation between the frequency to which respondents discuss climate change information

Chi-squared analysis reveals that:

- 70% of those who discuss climate change related information on a daily basis, and 93.3% of those on a weekly basis, were more likely to be those who believe protecting the environment is important (x^2=126.100, df=8, p<0.000);
- Those who believe protecting the environment is important were more likely to discuss climate change related issues on a monthly basis (33.8%), whilst those who do not believe that protecting the environment is important were more likely to never discuss climate change related information (74.6%) x^2=126.100, df=8, p<0.000);
- The proportion of those respondents who indicated they frequently discuss climate change related topics, on a daily-weekly basis, is significantly higher amongst members of environmental societies (31.4%; x^2=54.967, df=4, p<0.000);
- Respondents who read environmental magazines (71.1%; x^2=70.334, df=4, p<0.000) and watch programmes with an environmental focus (70.2%; x^2=81.811, df=4, p<0.000) discuss climate change related topics less frequently (on a monthly and occasional basis);
- Respondents were more likely to discuss climate change on a weekly basis when they gain climate change related information from radio sources (57.6%; x^2=73.116, df=4, p<0.000); magazines (20%; x^2=11.244, df=4, p<0.024); newspapers (83.1%; x^2=70.709, df=4, p<0.000); and family and friends (28.8%; x^2=22.696, df=4, p<0.000).

Chi-squared analysis indicates that proportion of those respondents who stated they discuss climate change related topics, on a weekly basis, is significantly higher amongst:

- Those educated to college level and above (63.4%; x^2=46.002, df=16, p<0.000);
- Those employed full time (50%; x^2=61.310, df=20, p<0.000);
- Those aged 46-55 (30%; x^2=37.768, df=20, p<0.009).

Those indicating human activities as their understanding of the term "climate change" and as a cause of climate change are more likely to indicate they discuss climate change related information on a regular basis, thus indicating a higher level of engagement and understanding of the issue. Moreover, those who believe that environmental protection is important are more likely to discuss climate change issues on a daily-weekly basis, whereas those who do not believe that protecting environment is important were more likely to indicate they never discuss the issue.

Once again, these findings may indicate levels of interest amongst respondents towards climate change; their willingness to discuss the issue with others; and the importance it has in their own lives (Lorenzoni and Langford, 2005). The analysis further substantiates this point concerning engagement with environmental issues, indicating that members of environmental societies and those who engage with environmental programmes and magazines are more likely to discuss climate change on a daily-weekly basis. Additionally, those who hold higher levels of formal education, employed full time and aged 46-55 are more likely to discuss about climate change on a daily-weekly basis. These findings may suggest that those who regularly engage with climate change information reflect levels of awareness of, and concern for, climate change (Anker-Nilssen, 2003; DEFRA, 2007; Dunlap and McCright, 2008; Eurobarometer, 2009; Upham *et al.*, 2009).

5.5. ATTITUDES TOWARDS ADDRESSING CLIMATE CHANGE

Attitudes are hypothetical constructs that indicate an individual's evaluation towards an attitude 'object'; in this context, (addressing) climate change (Upham *et al.*, 2009). Attitudes may have a particular direction and intensity, a strong or weak opinion, which may be positive or negative (O'Connor *et al.*, 1999; Lorenzoni and Pidgeon, 2006; Abrahamse and Steg, 2009; Upham *et al.*, 2009). Attitudinal surveys are often predicated on the assumption that attitudes are key drivers of behaviour as stipulated in the TPB (Ajzen, 1991; Verplanken, 2011). The attitude-behaviour link is not always one of simple linearity from cause to effect as stipulated in the TPB (Verplanken, 2011). This section explores attitudes as an evaluative reaction towards addressing climate change; climate scepticism; and carbon reduction practices.

5.5.1. Attitudes towards (addressing) climate change

Previous research has attempted to ascertain people's attitudes towards a range of environmental issues (Thompson and Barton, 1994; Schultz and Zelezny, 1999; Schultz, 2001; Schultz *et al.*, 2004; Snelgar, 2006) including climate change (Kempton, 1991; Berk and Schulman, 1995; Kempton, 1997; Bord *et al.*, 1998; Bord *et al.*, 2000; Rathzel and Uzzell, 2009; Whitmarsh, 2009a). Previous studies have reported that public attitudes have focused on whether climate change is occurring,

and if humans are causing it (O'Connor *et al.*, 2002; Lorenzoni and Langford, 2005); the perception of climate change as a risk, and whether action should be taken consequently (Lorenzoni and Langford, 2005; Whitmarsh, 2009a); and climate change being perceived as a remote issue (Ockwell *et al.*, 2009; Upham *et al.*, 2009).

The majority of survey respondents (*n*=346, 55.9%) stated that they were concerned about climate change. In contrast, 153 respondents (24.7%) stated that they were not concerned, whilst the remaining respondents (*n*=120, 19.4%) stated that they were unsure about climate change.

Table 5.5 demonstrates the variation between the differing attitudes towards protecting the environment and individuals with different characteristics.

Table 5.5: Variation between the six positions of concern towards (addressing) climate change

Attitude towards (addressing) climate change	**Groups with significantly higher proportions of responses**	
	Percentage	**Characteristic**
Personally concerned about climate change Blacon: *n*=123, 56.7% Congleton: *n*=113, 57.7% Northwood: *n*=110, 53.4%	50.9%	Reducing carbon emissions reflected understanding of "carbon reduction" (x^2=131.069, df=10, p<0.000)
	52.6%	Hear about climate change information on a daily-weekly basis (x^2=165.528, df=8, p<0.000)
	32.8%	Gain climate change information from radio sources (x^2=56.154, df=2, p<0.000)
	56.4%	Gain climate change information from newspapers (x^2=55.675, df=2, p<0.000)
	38.7%	Discuss climate change information on a monthly basis (x^2=203.191, df=8, p<0.000)
	96.8%	Believe protecting the environment is important (x^2=294.855, df=4, p<0.000)
	19.7%	Member of environmental organisation (x^2=21.859, df=2, p<0.000)
	43.4%	Readership of environmental magazines (x^2=71.790, df=2, p<0.000)
	50%	Viewership of environmental programmes (x^2=76.296, df=2, p<0.000)
	59.5%	Educated to further education level or above (x^2=29.221, df=8, p<0.000)

	46.5%	Employed full time (x^2=109.201, df=10, p<0.000)
	48.5%	Ages 36-55 (x^2=49.570, df=10, p<0.000)
Unsure about their concern towards climate change Blacon: *n*=38, 17.5% Congleton: *n*=43, 21.9% Northwood: *n*=39, 18.9%	49.2%	Hear about climate change information on a monthly basis (x^2=176.294, df=8, p<0.000)
	16.7%	Gain climate change information from radio sources (x^2=56.154, df=2, p<0.000)
	34.2%	Gain climate change information from newspapers (x^2=55.675, df=2, p<0.000)
	44.2%	Never discuss climate change information (x^2=203.191, df=8, p<0.000)
	60.8%	Believe protecting the environment is important (x^2=294.855, df=4, p<0.000)
	13.3%	Readership of environmental magazines (x^2=71.790, df=2, p<0.000)
	20%	Viewership of environmental programmes (x^2=76.296, df=2, p<0.000)
	56.6%	Educated up to secondary level (x^2=29.221, df=8, p<0.000)
	29.2%	Employed full time (x^2=109.201, df=10, p<0.000)
	48.3%	Ages 36-55 (x^2=49.570, df=10, p<0.000)
Not personally concerned about climate change Blacon: *n*=56, 25.8% Congleton: *n*=40, 20.4% Northwood: *n*=57, 27.7%	41.5%	Unsure about the definition of "carbon reduction" (x^2=131.069, df=10, p<0.000)
	32.7%	Never hear about climate change information (x^2=176.294, df=8, p<0.000)
	22.2%	Gain climate change information from newspapers (x^2=55.675, df=2, p<0.000)
	72.5%	Never discuss climate change information (x^2=203.191, df=8, p<0.000)
	35.9%	Do not believe protecting the environment is important (x^2=294.855, df=4, p<0.000)
	11.1%	Readership of environmental magazines (x^2=71.790, df=2, p<0.000)
	13.7%	Viewership of environmental programmes (x^2=76.296, df=2, p<0.000)
	56.9%	Educated up to secondary level (x^2=29.221, df=8, p<0.000)
	35.3%	Unemployed (x^2=109.201, df=10, p<0.000)
	50.9%	Ages 18-35 (x^2=49.570, df=10, p<0.000)

Concern for, and attitudes towards, (addressing) climate change varies amongst different demographics and environmental values. These findings are broadly consistent with previous studies, particularly highlighting that: those with pro-

environmental values (believe protecting the environment is important) (Poortinga *et al.*, 2002) and those educated at college level or above are more concerned about climate change (Durant *et al.*, 1998; Hargreaves *et al.*, 2003; Upham *et al.*, 2009). However, younger age groups are more likely to be less concerned about climate change (Eurobarometer, 2009). However, Anker-Nilssen (2003) reports that as younger people are more educated than previous generations, they are more likely to be engaged in environmental issues. The findings here do not support this assertion, but suggest that younger age groups are more likely to be less concerned than middle, and older, age groups.

The analysis demonstrates that those who hear, and discuss, climate change on a regular basis are more likely to hold a positive attitude. This may suggest that the information heard, and discussed, positively influences attitudes towards the issue, possibly reflecting the information presented by media (Boykoff, 2007; Liu *et al.*, 2008). This may also suggest that those who read environmental magazines and watch environmental programmes are also more likely to be more concerned about climate change. Although not statistically significant, females are more likely to be concerned (59.4%) than men (52.6%), along with members of environmental societies (79.1% opposed to 52.9%).

Respondents were asked to provide reasons why they were, or were not, concerned towards (addressing) climate change. Table 5.6 shows the attitude statements towards (addressing) climate change by survey respondents.

Table 5.6: Attitudes towards (addressing) climate change

Attitude Statement	Blacon	Congleton	Northwood	Total
Negative impacts on/concern for future generations	28 (12.9%)	26 (13.3%)	15 (7.3%)	69 (11.1%)
Doesn't affect me	21 (9.7%)	9 (4.6%)	21 (10.2%)	51 (8.2%)
Negative impacts on lifestyle/way of life	20 (9.2%)	3 (1.5%)	12 (5.8%)	35 (5.7%)
Negative impacts (extreme weather/sea	11 (5.1%)	16 (8.2%)	8 (3.9%)	35 (5.7%)

level rise etc)				
Negative impacts on the environment	13 (6%)	13 (6.6%)	17 (8.3%)	43 (6.9%)
Don't care/not bothered/apathy	13 (6%)	11 (5.6%)	3 (1.5%)	27 (4.4%)
Negative impacts on other people	14 (6.5%)	4 (2%)	7 (3.4%)	25 (4%)
Not an issue that needs addressing/not a priority	8 (3.7%)	10 (5.1%)	6 (2.9%)	24 (3.9%)
Need to do something about climate change/take action	3 (1.4%)	9 (4.6%)	9 (4.4%)	21 (3.4%)
Climate change results in health impacts	5 (2.3%)	11 (5.6%)	5 (2.4%)	21 (3.4%)
I am concerned/care about the environment	5 (2.3%)	11 (5.6%)	4 (1.9%)	20 (3.2%)
Concern that climate change directly impacts on individual	9 (4.1%)	1 (0.5%)	8 (3.9%)	18 (2.9%)
Not too much to worry about	6 (2.8%)	6 (3.1%)	5 (2.4%)	17 (2.7%)
Doesn't affect me at this moment in time	7 (3.2%)	4 (2%)	6 (2.9%)	17 (2.7%)
Will affect everyone/effects are global	8 (3.7%)	5 (2.6%)	4 (1.9%)	17 (2.7%)
Not concerned/interested	0 (0%)	3 (1.5%)	13 (6.3%)	16 (2.6%)
Not serious/important	2 (0.9%)	10 (5.1%)	3 (1.5%)	15 (2.4%)
Don't know that much about it	8 (3.7%)	4 (2%)	3 (1.5%)	15 (2.4%)
Responsibility to address climate change	7 (3.2%)	2 (1%)	7 (3.4%)	16 (2.6%)
Climate change will get worse in the future	6 (2.8%)	3 (1.5%)	5 (2.4%)	14 (2.3%)
Question the science and evidence of climate change	0 (0%)	6 (3.1%)	7 (3.4%)	13 (2.1%)
Climate change is natural	1 (0.5%)	6 (3.1%)	7 (3.4%)	14 (2.3%)
Not sure what I can do	2 (0.9%)	6 (3.1%)	4 (1.9%)	12 (1.9%)
Climate change is occurring	1 (0.5%)	0 (0%)	11 (5.3%)	12 (1.9%)
It's a serious/important issue	2 (0.9%)	5 (2.6%)	3 (1.5%)	10 (1.6%)
Not something I really	5 (2.3%)	3 (1.5%)	1 (0.5%)	9 (1.5%)

think about				
Nothing can be done to address climate change	1 (0.5%)	2 (1%)	4 (1.9%)	7 (1.1%)
Not enough being done to prevent climate change	3 (1.4%)	1 (0.5%)	3 (1.5%)	7 (1.1%)
There are no negative impacts	3 (1.4%)	0 (0%)	2 (1%)	5 (0.8%)
Climate change results in economic impacts	2 (0.9%)	3 (1.5%)	0 (0%)	5 (0.8%)
Impact on places where we live	2 (0.9%)	0 (0%)	1 (0.5%)	3 (0.5%)
Climate change will exacerbate other issues	1 (0.5%)	1 (0.5%)	1 (0.5%)	3 (0.5%)
There are limits to earth's resources	0 (0%)	2 (1%)	1 (0.5%)	3 (0.5%)
Total	*n*=217 (100%)	*n*=196 (100%)	*n*=206 (100%)	*n*=619 (100%)

Survey respondents stated that their attitudes towards (addressing) climate change were based on a diverse range of concerns. Primarily, respondents stated that their attitudes towards (addressing) climate change relate to the negative impacts of climate change: for future generations (*n*=69, 11.1%), on lifestyles and way of life (*n*=35, 5.7%), negative impacts of climate change (*n*=35, 5.7%) and on the environment (*n*=35, 5.7%). The attitude statements in Table 5.6 suggest that the predominant attitudes towards climate change are based on concerns relating to the impacts of climate change, which accounted for 46.8% of responses (*n*=290). However, 8.2% of respondents stated that they were not concerned about climate change as they felt it did not affect them, and a further 2.7% remarked that climate change did not affect them at this moment in time, indicating they considered that it might have an impact on them personally in the future. These results are not uncommon, and reflect previous findings suggesting that they do not perceive climate change to personally affect them (O'Connor *et al.*, 1999; Ockwell *et al.*, 2009).

Some respondents cited specific aspects of their attitudes were related to addressing climate change, either positively or negatively. Specifically, 3.9% of respondents

stated that climate change was not an issue that required addressing and was not a priority. Similarly, 15 respondents (2.4%) commented that (addressing) climate change was not an important or serious issue that needed to be tackled. In contrast, 10 respondents (1.6%) considered that climate change was a serious issue that required some level of response towards. Despite this, some respondents identified a more positive attitude towards addressing climate change; 3.4% of respondents stated that there was a need to do something about climate change, and 2.6% of respondents stated that they had a responsibility to do something to reduce their carbon emissions. With respect to personal action on climate change, 12 respondents (1.9%) stated that they were unsure what they could do to address the issue. Attitude statements specifically relating to addressing climate change account for 18% of responses (*n*=112).

5.5.2. Locating attitudes towards addressing climate change

Attitudes towards (addressing) climate change can be placed along a continuum that reflects a local-global scale. Global concerns (e.g. the negative impacts of climate change for future generations) relating to the impacts of climate change received a larger number of responses suggesting that these issues are the most important factors for residents' concern regarding climate change. This reaffirms the point that whilst the issue of climate change is considered socially relevant, most residents do not feel that climate change poses a prominent threat to them on an individual level (Ockwell *et al.*, 2009). The survey findings illustrate that, with the exception of those who state they are concerned about (addressing) climate change, public concern and attitudes towards (addressing) climate change are an issue that is removed in time and space, rather than personally relevant, affecting future generations and other countries (Devine-Wright, 2013).

The attitude statements provided can be further categorised and placed along a continuum with respect to their level of concern regarding addressing climate change, and the characteristics of these concerns. The attitude statements in Table 5.7 were assigned to one of six subdivisions with respect to their level of concern (Appendix 9). As a result of the themes identified by respondents in response to their

level of concern and attitude statement, Figure 5.6 was constructed to illustrate six different positions survey respondents' hold towards (addressing) climate change, and the reasons for their level of concern. These findings are important because they demonstrate specifically the varying attitudes towards addressing climate change and the characteristics of these attitudinal positions. The positions in Figure 5.6 range from "engaged" and "concerned" (those who stated they are personally concerned about climate change), through "detached" and "uncertain" positions (those who are unsure about their concern), to "apathetic" and "disengaged" standpoints (those who are not personally concerned about climate change).

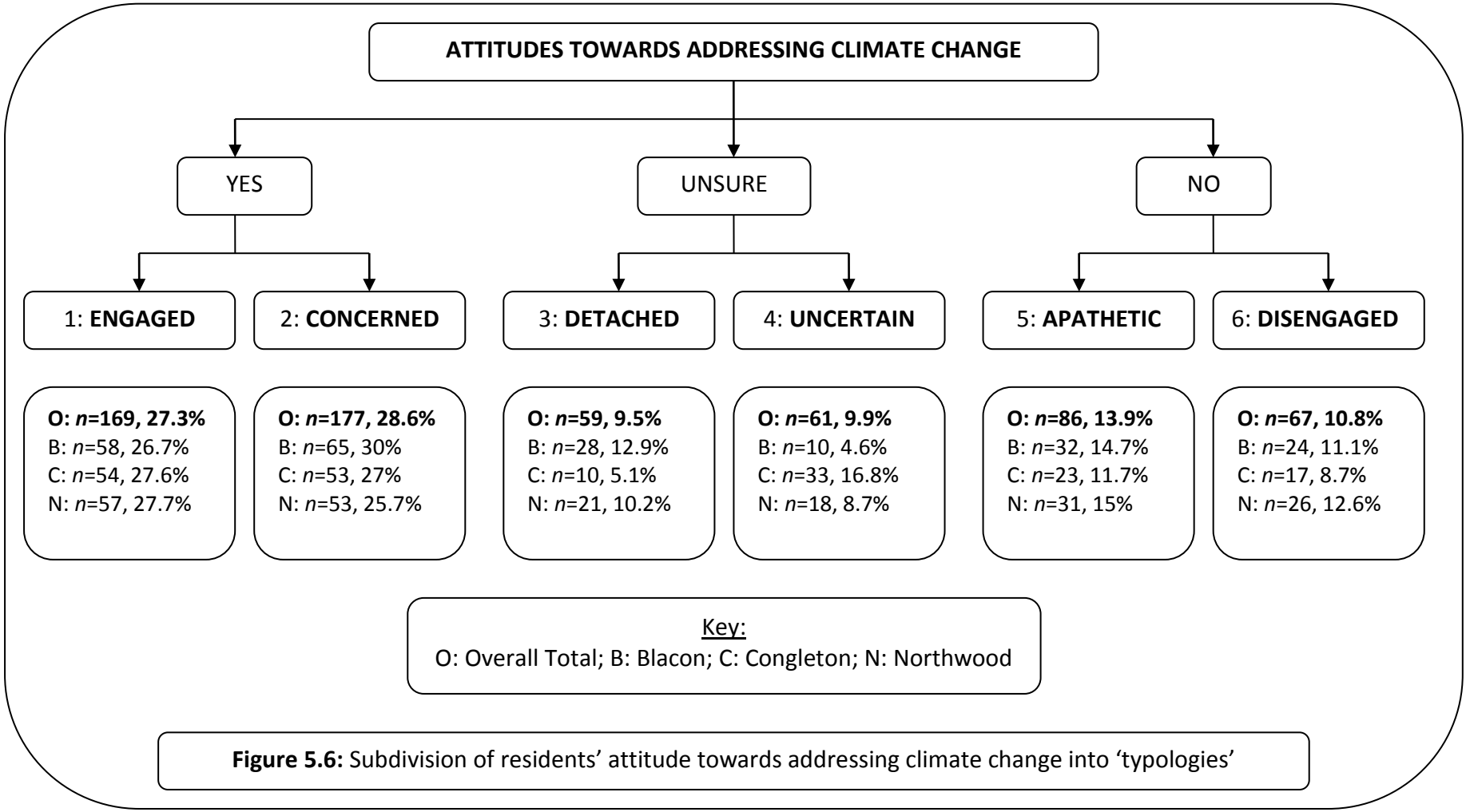


Figure 5.6: Subdivision of residents' attitude towards addressing climate change into 'typologies'

Focus group participants were also asked about whether they were personally concerned about climate change, and to give reasons for their responses. The question posed to participants did not explicitly question their attitudes towards taking action, however, participants, irrespective of their attitude mentioned dimensions of addressing climate change explicitly. This is important, essentially because attitudes towards climate change have shifted from questions relating to whether climate change is occurring and whether humans cause it (O'Connor *et al.*, 2002; Lorenzoni and Langford, 2005), to whether, and how, climate change should be addressed.

Attitudes towards addressing climate change indicated by focus group participants were independently analysed and categorised from questionnaire results (particularly from Figure 5.6), and analysed in their own right in keeping with the philosophical and methodological approaches (Chapter 4) of this study. Participants' attitudes towards addressing climate change coincided with the attitudinal positions identified in Figure 5.6. Consequently, the qualitative data, once again, validates the use of the mixed methods design utilised in this study, and provides depth of understanding to the nature and character of attitudes towards addressing climate change. Sections 5.5.2.1 to 5.5.2.6 provide greater depth of detail relating to the nature and character of the six varying positions towards attitudes towards addressing climate change (Figure 5.6), based upon quantitative and qualitative data analysis.

5.5.2.1. "Engaged" Attitudes

The first attitudinal position relates to those respondents and participants classified as holding an "engaged" attitude towards addressing climate change.

Box 5.8: Characteristics of respondents who hold an "engaged" attitude towards addressing climate change
Respondents in this category had a very high level of concern about climate change (exemplified by their reasons as to why climate change personally concerned them);

they were aware of the multiple causes, and acknowledged the serious impacts, of climate change (local and global); considered it to be a threat on themselves and/or reflected a concern for others and considered the issue to be serious and had a responsibility to address it. Respondents in this category were highly engaged with (addressing) climate change: hearing about it on a daily-weekly basis, and occasionally discussing it with others.

Exemplar quotes included: "Because I know that I am responsible for it with what I do" (BR77), "The earth can't support our luxury lifestyles and something drastic needs to happen for sustainability to take place" (CR1), and "My generation will be responsible for reducing climate change in the future" (NR2).

Chi-squared analysis of "engaged" respondents

Percentage	Characteristic
29.6%	Identify "pollution" as the main cause of climate change (x^2=137.243, df=25, p<0.000)
29%	Identify "people" as the main cause of climate change (x^2=137.243, df=25, p<0.000)
59.2%	Hear about climate change information on a daily-weekly basis (x^2=182.307, df=20, p<0.000)
34.5%	Gain climate change information from radio sources (x^2=57.162, df=3, p<0.000)
61.5%	Gain climate change information from newspapers (x^2=59.873, df=5, p<0.000)
37.3%	Discuss climate change information on a occasional basis (x^2=212.732, df=20, p<0.000)
98.2%	Believe protecting the environment is important (x^2=314.683, df=10, p<0.000)
24.9%	Member of environmental organisation (x^2=29.417, df=5, p<0.000)
39.6%	Readership of environmental magazines (x^2=76.376, df=5, p<0.000)
50.9%	Viewership of environmental programmes (x^2=79.903, df=5, p<0.000)
62.2%	Educated to further education level or above (x^2=41.697, df=20, p<0.003)
46.2%	Employed full time (x^2=122.422, df=25, p<0.000)
46.8%	Ages 26-45 (x^2=56.486, df=25, p<0.022)

This analysis demonstrates that higher proportions of those who hear about climate change on a regular basis, particularly from newspapers and radio sources and discussing the issue occasionally. These findings show that along with regularly hearing, and discussing, climate change information, higher proportions of those who read and watch environmental materials (Hargreaves *et al.*, 2003) and members of environmental societies are more likely to hold "engaged" attitudes. This suggests that those who actively engage with, and in, environmental related activities are more likely to be highly concerned about addressing climate change.

Consistent with previous results, these findings demonstrate that higher pro-environmental values are also more concerned about climate change (Poortinga *et al.*, 2002). With respect to demographic variables, it is noted that those with formal qualifications at college level or above and employed full time (indicative of higher income brackets) are more likely to be highly concerned towards addressing climate change. These findings are consistent with other surveys suggesting that higher income and education show higher levels of concern about climate change (Anker-Nilssen, 2003; DEFRA, 2007; Eurobarometer, 2009).

The analysis indicates that those aged 26-45 are also highly engaged and concerned about addressing climate change, despite previous studies suggesting that younger age groups are less concerned about the issue. Here, those aged between 26-35 demonstrate substantial concern for addressing climate change, perhaps indicative of the impact of education (Anker-Nilssen, 2003); media (re)presentations (Upham *et al.*, 2009); or an awareness that the impacts of, and actions required to address, climate change will be more prevalent in their lifetime (Section 5.2). Although not statistically significant, females are more likely to hold "engaged" attitudes than males (29.5% and 25.2% respectively) (DEFRA, 2002; Anker-Nilssen, 2003).

Focus group discussions allowed those who held an "engaged" attitude to expand upon their perspectives more specifically and in greater depth. Participants holding an "engaged" attitude articulated their concern, reflecting their own cognitive, affective and behavioural engagement with the issue, which was substantial. Specifically, "engaged" participants discussed the impacts of climate change on future generations, their perceived understanding of others' attitude towards addressing the issue, and their concerns of not taking action to reduce the causes and consequences of climate change:

> "It personally concerns me. You hear about phrases like "we're borrowing the earth off our children", basically future generations, and they've got… live on the same planet as us and we're not really looking after it very well… so in the future what we have to deal with now is going to be multiplied a lot more in their lives. They're going to have to say "we're going to have to do something about this now" because they haven't got time to think that "it doesn't concern me" because it's going to be too late by then" (NP4),
>
> "We've left them with the legacy of that, finding alternatives… and having to move whole communities and people on because of our neglectful behaviour

now. We consider ourselves to be so advanced, we had the industrial revolution… and we claim to be at the forefront of all technology and come up with all these great pieces of machinery that can help build and improve our society, however, the knock on effect is that there's always a selfish option is that we're taking away from the future… It's that short sighted vision of the here and now only and not thinking about the next generation and the legacy we're leaving behind" (NP2),

"You talk about the future and future generations… the earth's population hit 7 billion earlier this year, so it's an increasing population and you're going to get less and less space, with more increased problems" (NP4),

"I'm very concerned about climate change, and I just want to be able to see everyone clubbing together and seeing it as everyone's collective responsibility really. Because people are going to live longer, we've got a rising population, we have such advances in healthcare, quality of life and nutrition that people are living longer. We've got vast amounts of things that can keep people going, the minute we get a swine flu epidemic, out go vaccines and save everybody" (NP2).

The conversation between NP2 and NP4 highlights underpinning concepts reflecting "engaged" attitudes towards addressing climate change. Both participants demonstrate a high level of awareness, and understanding, of interrelated issues relating to climate change (i.e. rising population, healthcare, nutrition and quality of life). NP4 demonstrates this by stating that future generations will deal with the "multiplied" impacts; the world's population having reached 7 billion; and an increasing population will require more resources, which in turn will contribute to the causes of climate change. NP2 and NP4 relate their concern to future generations and use emotive language, and substantiate their position with quotes, such as "borrowing the earth off our children" and a "legacy [of]… not thinking too much about the future".

"Engaged" participants demonstrated a substantial cognitive and affective engagement with the issue; illustrating that they feel personally connected to the

issue of climate change; and that others do not perceive the long-term implications of failing to address the causes. This point is strengthened by participants identifying that "we're not really looking after it [the planet] very well" and that it is "everyone's collective responsibility" to take action. Reference to collective responsibility is detailed in Sections 7.3.3.3 and 7.3.4.8. These substantiations of participants "engaged" attitudes reflect a level of discomfort with limited action taking place to address climate change, and is what NP2 defines as a "selfish" and "short sighted vision of the here and now only". This quote also reflects deep concern for the future, and the image (or "legacy") of current generations taking action on climate change. These comments reflect a deep connection with addressing climate change on an affective and behavioural level, not just for themselves but also for other people. Affective and behavioural dimensions of "engaged" attitudes are reflected in NP2's comment stating that the lack of action to address climate change illustrates a sense of "neglect" among society, and failing to take action has resulted in consequences for communities.

5.5.2.2. "Concerned" Attitudes

The second attitudinal position relates to those respondents and participants classified as holding a "concerned" attitude towards addressing climate change.

Box 5.9: Characteristics of respondents who hold an "concerned" attitude towards addressing climate change
Respondents in this category had a high concern about climate change (exemplified by their reasons as to why climate change personally concerned them); acknowledged the impact of climate change and had a concern for the (impacts of climate change on the) environment. Respondents considered the issue to be serious and believed that action should be done to mitigate the impacts. Respondents were engaged with (addressing) climate change: hearing about it frequently, but discussing it with others on an infrequent basis (monthly). Exemplar quotes included: "It's bad for the environment and wildlife" (BR82), "I am concerned for the environment" (CR131), and "I am concerned about the state of the planet" (NR6).

Chi-squared analysis of "concerned" respondents	
Percentage	**Characteristic**
28.8%	Identify "people" as the main cause of climate change (x^2=137.243,

	df=25, p<0.000)
46.3%	Hear about climate change information on a daily-weekly basis (x^2=182.307, df=20, p<0.000)
31.2%	Gain climate change information from radio sources (x^2=57.162, df=3, p<0.000)
51.4%	Gain climate change information from newspapers (x^2=59.873, df=5, p<0.000)
42.9%	Discuss climate change information on a monthly basis (x^2=212.732, df=20, p<0.000)
95.5%	Believe protecting the environment is important (x^2=314.683, df=10, p<0.000)
46.9%	Readership of environmental magazines (x^2=76.376, df=5, p<0.000)
49.2%	Viewership of environmental programmes (x^2=79.903, df=5, p<0.000)
57.1%	Educated to further education level or above (x^2=41.697, df=20, p<0.003)
46.9%	Employed full time (x^2=122.422, df=25, p<0.000)
31.6%	Retired (x^2=122.422, df=25, p<0.000)
52.6%	Ages 36-55 (x^2=56.486, df=25, p<0.022)

From this analysis, it is clear that those that consider people to be the causes of climate change, hear about climate change related information on a daily-weekly basis, and discuss related issues with others on a monthly basis are likely to hold "concerned" attitudes. Notably, "concerned" respondents do not discuss climate change as regularly as those with "engaged" attitudes, indicating a slightly lower level of engagement (McKenzie-Mohr and Smith, 1999). However, these findings demonstrate that higher proportions of those who read and watch environmental materials (Hargreaves *et al.*, 2003) and members of environmental societies are more likely to hold " concerned" attitudes.

Additionally, those with pro-environmental attitudes are also more likely to hold "concerned" attitudes towards addressing climate change (Poortinga *et al.*, 2002). With respect to demographic variables, it is noted that those with formal qualifications at college level or above and employed full time (indicative of higher income brackets) are more likely to be highly concerned towards addressing climate change. These findings are consistent with other surveys suggesting that higher income and education show higher levels of concern about climate change (Anker-Nilssen, 2003; DEFRA, 2007; Eurobarometer, 2009).

Chi-squared analysis indicated that a substantial proportion of retired respondents hold "concerned" attitudes. This finding is not consistent with other findings (Eurobarometer, 2009). This may suggest that older age groups hold "concerned" attitudes towards addressing climate change out of concern for future generations or their families. The analysis indicates that middle-aged groups are concerned about addressing climate change, suggesting that younger age groups are less concerned about the issue. Concern by age, however, is ambiguous (Upham *et al.*, 2009). These results are therefore partially consistent with previous findings, notably that older generations tend to be less concerned about climate change

(Eurobarometer, 2009). Although not statistically significant, females are more likely to hold "concerned" attitudes than males (29.9% and 27.4% respectively) (DEFRA, 2002; Anker-Nilssen, 2003).

Focus group discussions allowed those participants with "concerned" attitudes to expand upon their perspectives. "Concerned" participants stated that they were concerned about addressing climate change, but did not detail the same level of alarm as those who held an "engaged" attitude. "Concerned" participants articulated their attitudes and reflected their concern about climate change in opposition to others' perspectives; the need for their own behavioural responses to address the issue; and their concern about the consequences of climate change would have on wildlife and future generations:

> "I am concerned about the fact that if we don't do something about it, if we're not proactive then a lot of wildlife is going to be destroyed… if you think of my grandchildren and further generations then they're not going to know what some of these animals are… they're going to be seeing them or reading about them from the Internet, books or even seeing them stuffed in a museum" (CP1),
>
> "I am [concerned]. I don't think I'm maybe as concerned as… my nanna or someone who's older… because they've seen more of a change, whereas with me being young… I only know that I need to be proactive about it rather than seeing the effects of it" (CP4),
>
> "I'm concerned, mainly because of wildlife. If there is any impact on weather patterns etcetera, [animals] haven't done anything to impact on the weather… haven't fabricated machines and haven't emitted any emissions, they just get on naturally with their existence… basically, they're being punished by somebody else… living in an existence… [where] everything is natural… [and] we are basically making things that aren't natural like chemicals" (CP5).

CP1 and CP5 both state that they are concerned for wildlife, but for different reasons. CP1 states that they are concerned that by not taking action, or not taking a

sufficient amount of action, may lead to species and their habitats being destroyed, and that future generations will not be aware of the diversity of wildlife. This concern is multifaceted. CP1's comment demonstrates that they are concerned about the impact on wildlife and future generation in their own right, but is also concerned about the potential relationship between the two following irreparable negative consequences of climate change. CP5 comments that nature does not contribute to a changing climate, and that human interactions with the physical environment have "punished" wildlife with the release of "chemicals". Reference is made to machinery and emissions to impacting on nature, through climate change. The comments by CP1 and CP5 demonstrate that they are cognitively, affectively and behaviourally engaged with climate change. CP1 and CP5 demonstrate their cognitive engagement and understanding by articulating the interrelatedness between the natural environment and human activities. CP1 also demonstrates a deep affective and behavioural engagement discussing the educational and personal impacts of species extinction for future generations, as a result of not taking action.

CP4 indicates that they are concerned but identifies that they may not be as concerned about the issue as a family member as they may have observed and experienced climate change directly, but comments that they are concerned nonetheless. CP4's comments indicate a high level of cognitive and behavioural engagement. CP4 demonstrates this by acknowledging other people's experiences of climate change (acknowledging that despite not observing or experiencing the impacts of climate change first hand), and are aware of the "need to be proactive" in addressing the issue, emphasising the need for personal behavioural responses.

BP3 argues that they hold a "concerned" attitude towards addressing climate change specifically:

> "It concerns me [because] of…. what's happening both locally and nationally to reduce things because… everyone else knows that's something is going to happen, say in the future for other generations, so my main concern would be "so what do we do now" to [address climate change]. I don't think we can

resolve all of it but what can we do to reduce [it, should be done], even if it's not for our children but grandchildren or future generations" (BP3).

BP3 specifically states that they are concerned specifically about addressing climate change relating to what is happening at a local and national level to mitigate the causes of climate change, and emphasises that their main concern is what action "do we do now". BP3's comments also reflect a high level of cognitive, affective and behavioural engagement with addressing climate change. The emphasis BP3 places on "what we do now" reflects support for relatively immediate action to address climate change at the local level. The attitude articulated by BP3 reinforces the point that attitudes towards climate change have shifted towards perspectives of taking action; that action should be undertaken collectively for the benefit of future generations; and that action should be taken immediately to address climate change (at the community level), and is supported by participants. BP3 considers that addressing climate change may not be wholly resolved by human actions, and that action should be taken for the posterity of future generations. Here, BP3 demonstrates that actions taken by individuals and communities should be complimented by other methods to mitigate the causes and consequences of climate change.

5.5.2.3. "Detached" Attitudes

The third attitudinal position relates to those respondents and participants classified as holding a "detached" attitude towards addressing climate change.

Box 5.10: Characteristics of respondents who hold an "detached" attitude towards addressing climate change

Respondents in this category, despite having a good level of awareness about climate change, acknowledged that climate change was an issue but one that did not immediately impact on them. Instead, respondents who were categorised as "detached" specified that it had more global impacts. Additionally, they considered to be an issue that will need to be addressed in the future.

Exemplar quotes included: "[It's] Not that bad for me, it's bad for others though" (BR100), "There isn't any immediate danger to me or my family" (BR213), "Compared to other issues, it's not a priority or imminent threat" (CR75), and

"[We've] Not seen the true effects of it [climate change] yet" (NR16).

Chi-squared analysis of "detached" respondents

Percentage	Characteristic
30.5%	Identify "pollution" as the main cause of climate change (x^2=137.243, df=25, p<0.000)
44.1%	Hear about climate change on a monthly basis (x^2=182.307, df=20, p<0.000)
37.3%	Gain climate change information from newspapers (x^2=59.873, df=5, p<0.000)
40.7%	Never discuss climate change information (x^2=212.732, df=20, p<0.000)
69.5%	Believe protecting the environment is important (x^2=314.683, df=10, p<0.000)
18.6%	Readership of environmental magazines (x^2=76.376, df=5, p<0.000)
27.1%	Viewership of environmental programmes (x^2=79.903, df=5, p<0.000)
37.3%	Educated to further education level (x^2=41.697, df=20, p<0.003)
35.6%	Employed full time (x^2=122.422, df=25, p<0.000)
45.7%	Ages 36-55 (x^2=56.486, df=25, p<0.022)

The analysis demonstrates that those who hear about climate change related information on a monthly, and never discuss the issue with others are more likely to hold a "detached" attitude, indicating a lack of cognitive engagement with sources of information, and articulating their views towards (addressing) climate change. Subsequently, "detached" respondents may not reflect a sound understanding of the causes and impacts of, and solutions to, climate change (Anker-Nilssen, 2003; Eurobarometer, 2009). Engagement with sources of information suggest that "detached" respondents principally gain information from newspapers, however, the attention given to, reporting and journalistic norms of climate change in the media may not reflect sufficient, relevant and accurate information, resulting in uncertainty (Boykoff, 2008; Liu *et al.*, 2008; Risbey, 2008; Gavin, 2009).

With respect to environmental values, those that believe that protecting the environment is important held "detached" respondents, although this proportion is less than those holding "engaged" and "concerned" attitudes, suggesting that addressing environmental issues may be relatively important to "detached" respondents, but not personally (Section 5.2.1) (Giddens, 2009; Devine-Wright, 2013), and do not consider climate change to personally important, consistent with other findings (Norton and Leaman, 2004; Gifford *et al.*, 2009).

The analysis also demonstrates that those educated up to college level, employed full time and middle-aged groups are more likely to hold "detached" attitudes. These findings are broadly consistent with previous findings, indicating that education and income influence the perceived threat of climate change (Norton and Leaman, 2004), and whether it should be addressed (Lorenzoni and Langford, 2005).

"Detached" participants provided detail to their attitudes towards addressing climate change in focus group discussions, stating that although they believe climate change was not something that personally concerned them, they did believe that it was an issue that affected other people and future generations more so:

> "Yeah, absolutely… as a parent and a grandparent I'm definitely concerned… The more we're talking as a group, it sort of pricks your conscience even more. It's not our world that is affected, it's our children's world" (NP3),
>
> "I'm not personally concerned. I'm not like worried about it. I do obviously try to reduce things and do my bit, recycle, use my car less and have energy saving lightbulbs but it doesn't worry me. It's not something that I'm really concerned about as such. It's going to affect future generations more than me so, it doesn't really affect me now, but I will obviously try and do my bit" (BP4).

"Detached" participants reflected a respectable level of cognitive engagement with respect to their understanding of climate change causes and impacts, but articulated higher levels of affective and behavioural engagements within their attitudes towards addressing climate change. NP3 suggests the reason why they are concerned is for future generations, and their role as a parent and grandparent underpins their concern. Here, NP3's personal and maternal role shapes their attitude towards (addressing) climate change. This is substantiated by NP3 stating that "it's not our world that is affected, it's our children's world". It is this comment, and the use of the term "affected", illustrating a level of detachment from the causes of climate change, and that the perception of risk is deflected, towards future generations. However, NP3 states specifically that while discussing the (addressing) climate change, they have possibly become more concerned about the issue.

BP4 suggests that while they are not concerned or worried about the issue, they believe that climate change will affect future generations more than themselves. However, BP4 does suggest that climate change "doesn't really affect me now", indicating that they may consider it to have a direct impact upon them in the future. Again, this comment is indicative of the perception of risk from climate change to be

deflected towards future generations. Consequently, the attitude expressed by NP3 and BP4 reflect a "detached" attitude towards addressing climate change. Despite having a "detached" attitude, BP4 states that they do take a range of actions (Section 5.2.2.2), including recycling and using their car less. This finding is important because it illustrates that participants do not have to hold a specifically positive, personally concerned attitude towards addressing climate change to take action.

5.5.2.4. "Uncertain" Attitudes

The fourth attitudinal position relates to those respondents and participants classified as holding an "uncertain" attitude towards addressing climate change.

Box 5.11: Characteristics of respondents who hold an "uncertain" attitude towards addressing climate change

Respondents in this category were uncertain about the causes and impacts of climate change. Some acknowledged that climate change would impact on people elsewhere but considered it to be not personally relevant or considered a risk. Respondents in this category seldom heard about, and never discussed, climate change related information. To match this uncertainty towards (addressing) climate change also held mixed attitudes towards protecting the environment.

Exemplar quotes included: "It's going to impact on other countries before it will impact us in the UK" (BR182), "[I'm] Not sure if it's a credible threat to anyone" (CR54), and "I'm not sure it affects me directly" (NR21).

Chi-squared analysis of "uncertain" respondents

Percentage	Characteristic
29.5%	Identify "pollution" as the main cause of climate change (x^2=137.243, df=25, p<0.000)
29.5%	Identify "people" as the main cause of climate change (x^2=137.243, df=25, p<0.000)
54.1%	Hear about climate change on a monthly basis (x^2=182.307, df=20, p<0.000)
31.1%	Gain climate change information from newspapers (x^2=59.873, df=5, p<0.000)
47.5%	Never discuss climate change information (x^2=212.732, df=20, p<0.000)
52.5%	Believe protecting the environment is important (x^2=314.683, df=10, p<0.000)
36.1%	Educated to secondary level (x^2=41.697, df=20, p<0.003)
32.8%	Employed part time (x^2=122.422, df=25, p<0.000)
50.8%	Ages 36-55 (x^2=56.486, df=25, p<0.022)

It is clear that those who scantly hear about climate change related information, and never discuss the issue with others are more likely to hold an "uncertain" attitude. This may indicate that those who hold "uncertain" attitudes do not understand particular dimensions of (addressing) climate change, as a result of not engaging with materials that provide sufficient, relevant and accurate information. Consequently, these individuals are uncertain of their attitude, or ambivalent towards climate change; reflecting a combination of positive and negative (Poortinga and Pidgeon, 2003; Upham *et al.*, 2009; Bonnes *et al.*, 2011). The material referenced in this analysis demonstrates that the newspapers read may reflect inconsistent, or alternative, reporting on climate change, which may reinforce uncertainty (Boykoff, 2008; Liu *et al.*, 2008; Risbey, 2008; Gavin, 2009), thus exacerbating uncertainty amongst respondents.

With respect to environmental values, "uncertain" respondents held mixed views towards protection of the environment yet considered it to be important. These mixed views towards the importance of environmental protection demonstrates that environmental issues may not be an important priority for these individuals (Giddens, 2009; Devine-Wright, 2013). The analysis also demonstrates that those educated to secondary level, employed part time and middle-aged groups are more likely to hold "uncertain" attitudes. These findings are inconsistent with previous findings, suggesting that it under-25s and over 65s tend to be more uncertain and less concerned about climate change (Anker-Nilssen, 2003).

Focus group discussion allowed for those with "uncertain" attitudes to expand upon their perspectives. NP7 demonstrates that they were (momentarily) uncertain about their concern towards climate change, which is reflected in a lack of cognitive engagement with addressing the issue:

> "Not really… well no. I don't really know much about climate change… I thought there wasn't much you could do?" (NP7).

This short response identifies a level of momentary uncertainty about their position of concern towards addressing climate change. Only after momentary reflection, NP7 then corrected their level of concern about climate change from "not really", suggesting uncertainty, to "well no". NP7's position is justified by stating that they "…don't really know much about climate change". NP7 also noted that they considered that "there wasn't much you could do" to address climate change in a questioning manner further indicating their uncertainty. Consequently, NP7's attitude is defined as "uncertain". However, throughout the focus group, NP7

responded with a blasé attitude towards the issues being discussed, specifically with respect to community issues (Chapter 7). This demonstrates that NP7's attitude towards addressing climate change may fluctuate between an "uncertain" and "apathetic" position dependent upon the subject discussed. Although their attitude towards climate change may be one of apathy, towards the issue of addressing climate change, there is a certain degree of uncertainty, maybe as a result of their lack of awareness or reluctance to engage with information relating to the subject.

5.5.2.5. "Apathetic" Attitudes

The fifth attitudinal position relates to those respondents and participants classified as holding an "apathetic" attitude towards addressing climate change.

Box 5.12: Characteristics of respondents who hold an "apathetic" attitude towards addressing climate change

Respondents in this category were largely uninterested in the subject of climate change. Their lack of concern was based on a lack of cognitive and effective engagement with the issue (demonstrated by the frequency to which they hear about, and discuss, climate change related information). Some respondents did highlight that their lack of concern was based on climate change being a natural phenomenon and having some positive outcomes like warmer weather.

Exemplar quotes included: "Don't care about it, it won't affect me" (BR37), "It doesn't seem like a bad thing really, [we get] warmer weather" (BR56), "The climate changes all the time, nothing to be worried about" (CR93), and "Not something I genuinely care about" (NR44).

Chi-squared analysis of "apathetic" respondents

Percentage	Characteristic
25.6%	Identify "natural change" as the main cause of climate change (x^2=137.243, df=25, p<0.000)
37.2%	Hear about climate change on a monthly basis (x^2=182.307, df=20, p<0.000)
20.9%	Gain climate change information from newspapers (x^2=59.873, df=5, p<0.000)
74.4%	Never discuss climate change information (x^2=212.732, df=20, p<0.000)
43%	Do not believe protecting the environment is important (x^2=314.683, df=10, p<0.000)
48.8%	Educated to secondary level (x^2=41.697, df=20, p<0.003)
36%	Unemployed (x^2=122.422, df=25, p<0.000)
48.9%	Ages 18-35 (x^2=56.486, df=25, p<0.022)

From this analysis, it is observable that those who identify natural changes as a cause of climate change are more likely to indicate they are not personally concerned about climate change (Norton and Leaman, 2004) and, by extension, are "apathetic" towards addressing climate change. Additionally, those who suggest that they hear about climate change on a monthly basis and never discuss related information with others are also more likely to hold "apathetic" attitudes. Consistent with their attitude statements, this may indicate that "apathetic" respondents consciously do not engage with climate change related information, and what information they do engage with reinforces pre-existing attitudes (Nickersen, 1998; Upham *et al.*, 2009), potentially leading to scepticism, increased uncertainty and apathy to address the issue (Gavin, 2009; Corner *et al.*, 2012).

With respect to environmental values, those who indicated they did not believe protecting the environment was important were more likely to hold "apathetic" attitudes towards addressing climate change. This indicates that attitudes towards addressing climate change and environmental issues are consistent amongst "apathetic" respondents. Consistent with previous studies, low education attainment and income levels, and younger age groups tend to be less concerned about (addressing) climate change (Anker-Nilssen, 2003; Eurobarometer, 2009).

Participants with "apathetic" attitudes also elaborated upon their concern. "Apathetic" participants stated that their lack of concern for (addressing) climate change was due to the issue being temporally distant but still considered addressing climate change to be important for alternative reasons, not related to the environment, such as saving money on energy bills:

> "[I'm] not personally concerned because I think we'll be dead by the time it becomes a major issue. I'm not that bothered about it and it's not something that is going to pose any potential risk to me. However, I still think something should be done about it, even if it's just for the sake of reducing energy bills etcetera. Although I don't think it's a priority" (NP5).

NP5's statements clearly indicate that they are not personally concerned about climate change, and substantiate their reasons why. NP5 comments that they "will be dead" by the time climate change becomes a major issue, indicating that they are not engaged with sources of information that argue otherwise, and does not consider climate change to be a risk that will impact upon them personally. NP5 does state, however, that despite their attitude they believe that action should be taken

to address climate change. Yet, NP5 states that action should be taken for economic reasons (Brandon and Lewis, 1999), and does not indicate any environmental or social concerns to be an immediate priority. The comments by NP5 reflect a lack of cognitive and behavioural engagement. Specifically, NP5 clearly demonstrates that they do not consider climate change to be a major issue currently or that action to address it is a priority, whether at an international, national or local level.

5.5.2.6. "Disengaged" Attitudes

The sixth, and final, attitudinal position relates to those respondents and participants classified as holding a "disengaged" attitude towards addressing climate change.

Box 5.13: Characteristics of respondents who hold an "disengaged" attitude towards addressing climate change

Respondents in this category were dismissive of the subject of climate change. Their lack of concern was based on a significant lack of cognitive engagement with the issue. In addition, respondents did not see climate change as a risk to individuals or society. However, "disengaged" respondents did engage affectively, particularly with their choice of language to describe (addressing) climate change, notably in a dismissive or derogatory manner.

Exemplar quotes included: "Don't know much about it and think it's a load of crap!" (BR33), "I don't really give a shit [about climate change]" (CR56), and "I think it's just a minor issue and not very serious" (NR79).

Chi-squared analysis of "disengaged" respondents

Percentage	Characteristic
26.9%	Identify "natural change" as the main cause of climate change (x^2=137.243, df=25, p<0.000)
34.3%	Never hear about climate change information (x^2=182.307, df=20, p<0.000)
23.9%	Gain climate change information from newspapers (x^2=59.873, df=5, p<0.000)
70.1%	Never discuss climate change information (x^2=212.732, df=20, p<0.000)
35.8%	Unsure about whether protecting the environment is important (x^2=314.683, df=10, p<0.000)
40.3%	Educated to secondary level (x^2=41.697, df=20, p<0.003)
34.3%	Unemployed (x^2=122.422, df=25, p<0.000)
53.8%	Ages 18-35 (x^2=56.486, df=25, p<0.022)

The analysis demonstrates, that similar to those with "apathetic attitudes, higher proportions of those who identify natural causes of climate change are more likely to

not be personally concerned about climate change (Norton and Leaman, 2004), and hold "disengaged" attitudes towards climate change. This suggests that those who hold "disengaged" attitudes do not consider personal action to address climate change, as the causes relate to natural variability (Lorenzoni and Langford, 2005). Moreover, those who never hear, and discuss, climate change related information are more likely to hold "disengaged" attitudes, reflecting a lack of cognitive engagement with such information, resulting in a lack of awareness of the causes, impacts and solutions to climate change. As a result of not being informed about the issue, "disengaged" respondents do not feel that climate change is an issue that needs addressing (Dunlap and McCright, 2008).

Yet, the analysis demonstrates that "disengaged" respondents were likely to gain some information from newspapers. This result may indicate that the journalistic norms of climate change reporting in these outlets may influence levels of awareness, understanding and attitude amongst "disengaged" respondents, potentially leading to scepticism, uncertainty and apathy to address the issue (Nickersen, 1998; Gavin, 2009; Upham *et al.*, 2009; Corner *et al.*, 2012).

With respect to environmental values, those who indicated they did not believe protecting the environment was important were more likely to hold "disengaged" attitudes towards addressing climate change. This indicates that attitudes towards addressing climate change and environmental issues are consistent amongst "disengaged" respondents. These findings are consistent with previous studies, low education attainment and income levels, and younger age groups tend to be less concerned about (addressing) climate change (Anker-Nilssen, 2003; Leiserowitz *et al*., 2008; Eurobarometer, 2009).

Focus group discussions allowed those who held a "disengaged" attitude to expand upon their perspectives more specifically. Participants holding a "disengaged" attitude articulated their concern, which reflected a lack of cognitive, affective and behavioural engagement with the issue, which was substantial. "Disengaged" participants were dismissive about the issue of climate change; believed it to be a natural process, which humans cannot control; and considered that humans did not need to take action as climate change would (potentially) affect the future and this was not sufficient to take measures:

> "I think it's a load of rubbish. I'm not concerned at all and if it is happening I think it'll affect the future, and definitely not me. It changes all the time, there's nothing we can do to stop it. It's not something I care about, and I don't think we should waste time trying to sort it out" (NP8).

NP8 demonstrates their "disengaged" attitude with a substantial lack of affective and behavioural engagement towards climate change. NP8 is derisive and dismissive of climate change itself and questions whether it is actually occurring, and if it is believes it to be a natural phenomenon. The language used by NP8 also demonstrates that they feel strongly opposed to proposals for action to address the issue. Furthermore, NP8 firmly believes that as a result of the climate changing "all the time", humans have little control to manage the causes (and impacts). The language used by NP8 illustrates their opposition to addressing climate change: "a load of rubbish"; "not concerned *at all*"; and "…waste time", and further demonstrates their lack of affective and behavioural engagement. NP8 was absolute and confidently remarked that if climate change is occurring, it "definitely" will not affect them personally. This comment further demonstrates a level of disengagement with the potential impacts of climate change, and their substantial lack of awareness and cognitive engagement with sources of information. Consequently, NP8's attitude towards addressing climate change is firmly situated in the "disengaged" category.

5.5.3. Scepticism towards (addressing) climate change

Previous surveys have highlighted that the proportion of "sceptics" (those rejecting any human cause for climate change) could be as high as 17% (BBC World Service, 2007; Whitmarsh, 2011). In this research, 9.5% of respondents noted that the causes of climate change were natural, consistent with other surveys (Downing and Ballantyne, 2007). When asked explicitly if they were sceptical about a dimension of (addressing) climate change, 32.5% (*n*=201) identified that they were, and provided reasons for their scepticism. The majority of respondents (*n*=418, 67.5%) stated that they were not sceptical about a dimension of (addressing) climate change.

Table 5.8 highlights the variation between the differing levels of scepticism and individuals with different characteristics.

Table 5.7: Variation between (addressing) climate change sceptics and those who are not sceptical

Sceptical about a dimension of climate change	Groups with significantly higher proportions of responses	
	Percentage	**Characteristic**
Not sceptical about an elements of (addressing) climate change Blacon: *n*=140, 64.5% Congleton: *n*=146, 74.5% Northwood: *n*=132, 64.1%	30.5%	Identify pollution as a cause of climate change (x^2=50.403, df=5, p<0.000)
	26.9%	Identify people as a cause of climate change (x^2=50.403, df=5, p<0.000)
	46.2%	No positive consequences of climate change (x^2=96.683, df=4, p<0.000)
	29.3%	Increased awareness of human activity as a positive consequence (x^2=96.683, df=4, p<0.000)
	46%	Hear about climate change information on a daily-weekly basis (x^2=70.121, df=8, p<0.000)
	27.7%	Gain climate change information from radio sources (x^2=20.451, df=1, p<0.000)
	48.4%	Gain climate change information from newspapers (x^2=11.662, df=1, p<0.001)
	33.7%	Discuss climate change information on a monthly basis (x^2=73.364, df=4, p<0.000)
	88.4%	Believe protecting the environment is important (x^2=134.393, df=2, p<0.000)
	74.3%	Those who are concerned about climate change (x^2=174.802, df=2, p<0.000)
	74.3%	Hold an “engaged” or “concerned” attitude towards climate change (x^2=184.537, df=5, p<0.000)
	16%	Member of environmental organisation (x^2=4.519, df=1, p<0.034)
	35.8%	Readership of environmental magazines (x^2=23.440, df=1, p<0.000)
	43.1%	Viewership of environmental programmes (x^2=33.786, df=1, p<0.000)
	57.1%	Educated to further education level or above (x^2=13.282, df=4, p<0.010)
	43.3%	Employed full time (x^2=59.391, df=5, p<0.000)
	46.7%	Ages 36-55 (x^2=13.130, df=5, p<0.022)
Sceptical about an elements of (addressing) climate change Blacon: *n*=77, 35.5%	25.7%	Identified pollution as a cause of climate change (x^2=50.403, df=5, p<0.000)
	20.4%	Identified natural changes as a cause of climate change (x^2=50.403, df=5, p<0.000)
	48.5%	Identified warmer weather as a positive consequence of climate change (x^2=96.683,

Congleton: *n*=50, 25.5% Northwood: *n*=74, 35.9%		df=4, p<0.000)
	40.3%	Hear about climate change information on a monthly basis (x^2=70.121, df=8, p<0.000)
	34%	Gain climate change information from newspapers (x^2=11.662, df=1, p<0.001)
	54.4%	Never discuss climate change information (x^2=73.364, df=4, p<0.000)
	45.1%	Believe protecting the environment is important (x^2=134.393, df=2, p<0.000)
	49%	Those who are not personally concerned about (addressing) climate change (x^2=174.802, df=2, p<0.000)
	30.1%	Hold an "apathetic" attitude towards climate change (x^2=184.537, df=5, p<0.000)
	17%	Readership of environmental magazines (x^2=23.440, df=1, p<0.000)
	19.4%	Viewership of environmental programmes (x^2=33.786, df=1, p<0.000)
	57.3%	Educated up to secondary level (x^2=13.282, df=4, p<0.010)
	27.7%	Unemployed (x^2=59.391, df=5, p<0.000)
	22.3%	Ages 46-55 (x^2=13.130, df=5, p<0.022)

This analysis demonstrates that understandings of, engagement with, and attitudes towards (addressing) climate change influence scepticism towards (addressing) climate change, and also by demographic variables (Whitmarsh, 2011). Specifically, those indicating human activity are more likely to not be sceptical about elements of climate change, whereas those who indicate natural changes are more likely to be sceptical. Additionally those indicating that there are no positive consequences to climate change are more likely to indicate they are not sceptical, whereas those indicating warmer weather are more likely to be sceptical of climate change, despite identifying an impact (Upham *et al.*, 2009; Whitmarsh, 2011; Corner *et al.*, 2012).

Those who hear about climate change related information on a daily-weekly basis, and discuss such issues on a monthly basis were more likely to indicate they were not sceptical about climate change. This indicates that these respondents are engaged with (potentially) reliable and accurate sources of information demonstrating a sound awareness and understanding of climate change (Gavin, 2009; Upham *et al.*, 2009). Those who do not discuss climate change related information were more likely to be sceptical. These results suggest that scepticism may relate to diverse media and interpersonal sources (Whitmarsh, 2009a), thus influencing and exacerbating scepticism (Whitmarsh, 2011; Corner *et al.*, 2012).

With respect to attitudes towards the environment and (addressing) climate change, higher proportions of those who believe that protecting the environment is important were more likely to indicate they are not sceptical. This finding suggests that those with lower environmental values are more sceptical (Corbett and

Durfee, 2004; Whitmarsh, 2011). Additionally, those who are more personally concerned about climate change and hold "engaged" or "concerned" attitudes towards climate change were more likely to not be sceptical, whereas those with "apathetic" attitudes were more likely to be sceptical (Whitmarsh, 2011).

With respect to demographic values, those aged between 46-55 were more likely to be sceptical, yet those aged 36-45 were more likely to not be sceptical. This demonstrates that older age groups are more sceptical than younger age groups (DEFRA, 2007; Whitmarsh, 2011). Consistent with previous findings in this chapter, those who hold formal education above college level are not sceptical, suggesting an awareness and understanding of the causes and impacts of, and solutions to, climate change (Anker-Nilssen, 2003).

Table 5.8 shows respondents dimensions of scepticism towards (addressing) climate change.

Table 5.8: Respondents scepticism towards climate change and/or carbon reduction

Frequency	Blacon	Congleton	Northwood	Total
None	140 (64.5%)	146 (74.5%)	132 (64.1%)	418 (67.5%)
Natural causes/uncertainty of causes and impacts	27 (12.4%)	28 (14.3%)	18 (8.7%)	73 (11.8%)
Uncertainty of solutions or efficacy of solutions	19 (8.8%)	7 (3.6%)	5 (2.4%)	31 (5%)
Doubtful of potential associated impacts/risks	16 (7.4%)	3 (1.5%)	11 (5.3%)	30 (4.8%)
Scientific uncertainty/conspiracy	10 (4.6%)	2 (1%)	11 (5.3%)	23 (3.7%)
Impact we have to reduce it	1 (0.5%)	4 (2%)	16 (7.8%)	21 (3.4%)
No need to address the issue	4 (1.8%)	5 (2.6%)	7 (3.4%)	16 (2.6%)
Yes	0 (0%)	1 (0.5%)	6 (2.9%)	7 (1.1%)
Total	*n*=217 (100%)	*n*=196 (100%)	*n*=206 (100%)	*n*=619 (100%)

The majority of respondents (*n*=418, 67.5%) did not identify any aspects of scepticism towards climate change and/or carbon reduction. Those that are sceptical identified four dimensions to their "scepticism": (1) causes of climate change (*n*=73, 11.8%); (2) addressing climate change (*n*=68, 11%); (3) consequences of climate

change (*n*=30, 4.8%); and (4) climate change as a scientific conspiracy and extreme uncertainty (*n*=23, 3.7%).

11.8% of respondents identified (*n*=73) that they had some degree of scepticism towards the causes of climate change and their uncertainty of the contribution of human causes to the issue. With respect to addressing climate change, respondents identified that they were uncertain about the efficacy of solutions being employed to mitigate the causes and impacts (*n*=31, 5%). Respondents also identified the extent to which human intervention can have a significant impact on mitigating the impacts of climate change (*n*=21, 2.6%) as well as a minority of respondents identifying that there was no need to address the issue (*n*=7, 1.1%).

The number of those who stated they were sceptical about a dimension of addressing climate change is substantially higher than those found in previous research (BBC World Service, 2007; Downing and Ballantyne, 2007; Whitmarsh, 2011). Despite this, respondents' scepticism towards (addressing) climate change are more indicative of caution, or doubt, relating to the impact of the solutions available to mitigate the causes and consequences, and towards the efficacy of associated actions, and less indicative of scepticism of the causes of climate change identified in other studies (Downing and Ballantyne, 2007; Whitmarsh, 2011; Corner *et al.*, 2012).

5.5.4. Attitudes towards reducing carbon emissions

Attitudes towards a particular attitude object can be positive, neutral or negative (Crisp and Turner, 2007; Hogg and Vaughan, 2008). In this context, the attitude object explored is reducing carbon emissions. To ascertain specifically what residents consider about reducing their personal carbon emissions, respondents were asked to identify (up to) three positive and negative outcomes of reducing their carbon emissions. Table 5.9 identifies residents' perceived benefits and disadvantages towards reducing their personal carbon emissions.

Table 5.9: Identified benefits and disadvantages of reducing carbon emissions				
Identified benefit	**Blacon**	**Congleton**	**Northwood**	**Total**
Saves money	104	89	87	280
Good for/protects the environment	96	66	83	245
Reduces pollution/cleaner air	19	57	113	189
Saves energy/energy efficiency	22	42	69	133
None	21	30	20	71
Important	0	30	19	49
Reduces climate change	14	13	16	43
Improved awareness and/or behaviour change	19	11	9	39
Educate younger generations/involvement	11	13	5	29
Good for people	14	1	8	23
Don't know/not sure	13	4	4	21
Health benefits	2	5	3	10
Total	(100%)	(100%)	(100%)	(100%)
Identified disadvantage	**Blacon**	**Congleton**	**Northwood**	**Total**
Time consuming	61	74	68	203
Effort/demanding	43	68	83	194
Costs money	62	63	58	183
Difficult	40	64	42	146
Not perceived as important/no need	20	34	27	81
None	36	16	25	77
Inconvenience	11	27	34	72
Change of habit/lifestyle	13	11	23	47
Apathy	18	3	9	30
Questioning benefits	13	8	4	25
Sustaining action	14	1	4	19
Unsure of how to undertake measures	11	2	3	16
Don't know/not sure	5	2	1	8
Total	(100%)	(100%)	(100%)	(100%)
Note: percentage calculated on multiple answers cited by respondents				

The most common responses indicate that respondents identify carbon reduction practices to be associated with saving money (*n*=280), and congruent with the notion of environmental protection or in some way beneficial to the environment (*n*=245). Respondents primarily identify the economic and environmental advantages of

reducing their carbon emissions, yet, reducing pollution (resulting in cleaner air) (*n*=189) and saving energy (*n*=133) were also commonly mentioned. These findings are consistent with previous studies, indicating that environmentally beneficial actions result from non-environmental concerns such as a desire to save money (Brandon and Lewis, 1999; Stern, 2000; Whitmarsh, 2009b). Respondents also noted that reducing carbon emissions were important (*n*=49); helped to improved awareness and/or changed people's behaviour positively to reduce impacts on the environment (*n*=39); and helped to educate younger generations on the impact humans have on the planet (*n*=29).

Closer analysis of the results here indicates intriguing discrepancies in how respondents from different communities evaluate the positive dimensions of carbon reduction. No respondents in Blacon stated that reducing carbon emissions was important yet 30 respondents in Congleton and 19 respondents in Northwood indicated that it was important. Comparisons with the priorities considered in Section 5.2.3 indicate an inconsistency here, as respondents in Blacon consider climate change to be an important issue. This inconsistency could be explained by climate change not being a high priority in the everyday lives of respondents (Giddens, 2009; Ockwell *et al.*, 2009). Another outlier here indicates that respondents in Northwood mentioned reducing pollution and saving energy as positive outcomes of reducing carbon emissions more than respondents in Blacon and Congleton. However, respondents in Blacon highlighted that reducing carbon emissions was good for people and led to improved awareness and/or behaviour change. Respondents in Congleton indicated that reducing carbon emissions was important (*n*=30). Table 5.9 also indicates that respondents in Congleton identified that there were no positive dimensions to reducing carbon emissions (*n*=30) more than respondents from Blacon (*n*=21) and Northwood (*n*=20).

With respect to the negative dimensions of reducing carbon emissions, respondents indicated that they considered such practices to be time consuming (*n*=203); demanding (*n*=194); and difficult (*n*=146). Comparison with other environmental issues such as recycling also identifies that "time consuming", "effort", "difficulty"

and “inconvenience” are highly rated responses when evaluating the negative dimensions of environmental issues (Vining and Ebreo, 1990; Oskamp *et al.*, 1991; Perrin and Barton, 2001). Respondents also identified the idea of an economic disadvantage as a result of reducing carbon emissions. This supports the results identified in Table 5.4 that respondents identify economic impacts of climate change. Respondents identify that costs associated with carbon reduction relate to “implementing measures” (BR168) including solar panels or smart meters. Other negative dimensions of reducing carbon emissions identified by respondents related to inconvenience (*n*=72); changing habits and lifestyles to address the issue of climate change (*n*=47); apathy (*n*=30); and the difficulty of sustaining action on reducing carbon emissions (*n*=19).

Looked at closer, these results indicate that there are some differences between the respondents in the communities surveyed with respect to their evaluations of the negative dimensions of carbon reduction. Respondents in Congleton mentioned that carbon reduction practices were more time consuming (*n*=74) and difficult (*n*=64) than respondents in Blacon and Northwood. However, respondents in Northwood indicated that reducing carbon emissions was more inconvenient (*n*=34) and significantly impacted on their considerations to uptake such practices because of the effect it would have on their lifestyle (*n*=23). Comparatively, respondents in Blacon identified apathetic reasons (*n*=18) more than respondents in Congleton and Northwood.

Focus group participants discussed their attitudes towards reducing carbon emissions, which are consistent with those mentioned in the questionnaire survey. Participants noted that there were multiple advantages and disadvantages to taking action to reduce personal carbon emissions. Notably, participants highlighted that reducing their emissions helped future generations and was positive for the environment, but also conceded that taking action was time consuming, inconvenient and that purchasing sustainable alternatives cost more money:

> "We've all got a responsibility to do the best that we can so it makes it a nicer and safer environment for future generations and wildlife" (CP1),
> "It's all about the future. It's got to be" (CP3),
> "Definitely. It's about future generations. You're leaving a legacy for them and you want it to be a positive legacy and not a negative legacy because it's just not sustainable" (CP1).

Focus group discussions about what participants know about reducing their carbon emissions relate to the economic and environmental impacts of taking action. CP1 and CP3 discuss the reasons for taking action, and specifically highlight that it results in protection of wildlife and benefits for future generations. CP3 is absolute in their statement, emphasising that it's "all" about the future, indicating that their concern is for future generations. CP1 agrees and expands upon this stating that current generations should leave behind a positive legacy, indicating a deep concern of how they will be perceived by future generations if action is (not) taken to address climate change. These comments reflect a connection with taking action to address climate change, not just on a cognitive level (purely what they know about the impacts of their actions), but also on an affective and behavioural level. Moreover, CP1 and CP4 also discuss the economic impacts of taking action:

> "I'd like to [do more] but I don't see [how] due to work commitments, financial commitments because it seems that everything that you'd like to do, if it's for the benefit of reducing carbon footprint, then it's a lot more expensive" (CP1),
> "Like… solar panelling" (CP4),
> "The tables should be reversed so that if things were to reduce the carbon footprints then they should be cheaper to encourage people to do it, then the more expensive things" (CP1).

CP1 and CP4 discuss that although they would like to take more action (indicating they already take some measures) however, they consider alternative sustainable products to be more expensive, and as a result they are unable to purchase these, for example, solar panels. Participants clearly, and explicitly, state that they are in

favour of taking action; would like to do more; and take higher impact actions but are unable to do so for financial reasons. CP1 comments that sustainable alternatives should be cheaper to encourage people to take action. Jackson (2011) argues in favour of an ecological tax reform resulting in a shift in the burden of taxation from economic goods (e.g. incomes) to ecological bads (e.g. pollution), which would encourage more people to purchase sustainable alternatives to energy intensive products (see Section 7.3.4.2).

Participants felt positively about taking action and justified their feelings towards taking action. However, they also questioned other people's attitudes and actions towards addressing climate change; the impact it will have; and the role of habitual behaviour:

> "It's definitely a good thing if it is going to have an effect. If enough people get involved" (BP4),
>
> "It is definitely a good thing… if everyone can get involved. Unfortunately, there's not enough people doing it. The effect that it has may only be a little bit [but] it is a good thing if everyone gets involved" (BP2),
>
> "That's the thing… a lot of people don't do it because they're thinking "well, it's not going to be that big a deal if I don't do it because someone else is going to be doing it for me"" (BP3),
>
> "As an individual you think 'can I do anything?' when you see countries like India… China and emerging countries using up their coal reserves and burning it all off because they've accessible source[s] of coal… People think of it like 'why should I bother?'. Why should we bother doing it when they're just going to burn it, so we're going to be doing all this to the environment and they're just making it worse" (BP1).

Participants felt that although reducing their carbon emissions was instinctively a positive concept, there were concerns surrounding whether other people would hold similar attitudes towards carbon reduction, and reduce their emissions. BP2 acknowledges that holistically their actions may impact marginally, but if more

people took action to get involved, this would significantly reduce carbon emissions. Subsequently, participants considered that other people's participation would have more of an impact on reducing carbon emissions and discuss this positively. Here, participants further touched upon their feelings of collective action and not acting in isolation.

BP3 and BP1 expand upon this. BP3 makes reference to other people's attitudes, specifically referring to those who are apathetic towards addressing climate change (Section 5.5.2.5), and whether they will take action. BP3 also makes reference to other people not considering taking action to be important and "piggybacking" upon their efforts to address climate change. This finding is often referred to as the "free-rider effect" (Ockwell *et al.*, 2009), and as discussed, is a real concern amongst participants in this study. Moreover, BP1 considers that it is not just other individuals that make personal carbon reduction off-putting, but also the state of major developing countries like China and India using carbon intensive methods of energy production, and exacerbating the causes of climate change. Other participants discussed forcing people to take action and habitual behaviour:

> "We all need to reduce them… but because of modern lifestyles today, individually, you're not going to make a decision to do it. What's got to happen is that with architecture and technology at a much higher level… to say that "this is the way the world has got to run from now on", so saying that "these things are right and these things are wrong, either way this is how it goes". So if it's electric motor from now on instead of your fossil fuelled motors then that's the way it goes" (CP5),
>
> "It's little things like habits… when I was at university… in [our] first house, we didn't do things like recycling but when we were in our second house, we actually had a recycling box and [recycled]. It was habit. But it's silly things like that; making a habit is just a little change. But then you've got bigger things that are more important like your car" (CP4).

CP5 argues in support of higher level changes to make people act sustainably, particularly through the application of technology and architectural design. Essentially, CP5 describes that because modern lifestyles lock-out sustainable alternatives, higher level changes to society should force individuals to act sustainably and reorientate the ways in which people live. Seyfang and Smith (2007) assert that entrenched socio-economic, institutional and technological processes lock individuals and communities into unsustainable trajectories and lock out sustainable alternatives. Here, CP5 argues against the assertions by Seyfang and Smith (2007) that individuals and communities can alter unsustainable practices, and believes that reorienting society towards sustainability will arise from forcing green behaviours from a national government level or a technological perspective (Ockwell *et al.*, 2009).

CP4 relates their previous experience of taking action to what they feel should happen on a larger scale, to create habits where other people take action frequently. CP4 discusses that for actions such as recycling creating a habit should be a minor change in comparison to larger actions such as transport behaviours. Verplanken (2011) argues that opportunities exist for sustainable actions to turn into habits, such as when the contexts for actions are broken (as described by CP4 when they moved house).

Attitudes are considered to involve three key components: cognition (knowledge); affect (emotions); and behaviour (Upham *et al.*, 2009). This section has explored the ways in which people think, and feel, about reducing personal carbon emissions. Chapter 6 explores behavioural responses towards addressing climate change in depth.

5.6. CHAPTER SUMMARY

This chapter discussed the relative importance of (addressing) climate change; public awareness of, and attitudes towards, (addressing) climate change; climate scepticism and attitudes towards taking behavioural responses to reduce personal carbon

emissions. Box 5.14 summarises the main findings pertaining to environmental attitudes and the relative importance of (addressing) climate change.

Box 5.14: Prioritising (addressing) climate change: A summary of main findings

The relative importance of (addressing) climate change

Within the broader context of personal, social, economic and environmental matters, survey respondents identified that immediate concerns (i.e. employment; family and friends; financial concerns; and health) are the most important issues to them. Climate change secured its place as a middle ranked issue, yet only 33 respondents identified the issue as important. Previous studies highlight that in the context of everyday issues, climate change is not considered a priority and often lowly ranked (Poortinga and Pidgeon, 2003). Consequently, this small number of respondents identifying climate change as an important issue in the context of other issues demonstrates that climate change is not considered a priority or a direct personal risk or perceived as a direct risk (Giddens, 2009; Gifford *et al.*, 2009; Ockwell *et al.*, 2009; Devine-Wright, 2013).

Prioritising (addressing) climate change amongst environmental issues

Focus group participants identified the prevalent environmental concerns facing them, including: waste, wildlife, pollution, use of natural resources and climate change. Participants indicated that climate change was a concern, alongside other environmental issues. This demonstrates that participants consider a range of primarily global environmental concerns, yet locate their concern of such issues in terms of understanding, observation and direct experience. With respect to climate change, participants noted that changes in weather, and subsequently climate, over time provides cause for concern. The identification of primarily global environmental concerns suggests the existence of a "psychological distance", specifically "temporal pessimism", that issues such as climate change worsen over time (Gifford *et al.*, 2009; Devine-Wright, 2013).

Attitudes towards the environment

The majority of survey respondents (74%) indicated that protecting the environment was important, whilst 10.2% considered environmental protection was not important and 15.8% were unsure about its importance. Chi-squared analysis demonstrates that those engaged with environmental societies and materials are more likely to believe protecting the environment is important (Poortinga *et al.*, 2002; Anker-Nilssen, 2003). Moreover, those educated to college level and above, employed full time, middle age groups, and females were more likely to believe that protecting the environment is important (Anker-Nilssen, 2003; DEFRA, 2007; Upham *et al.*, 2009).

Attitudes towards the environment can be categorised into four groupings: (1) those who are environmentally conscious; (2) those who highlight the importance of the environment for its resources and services; (3) those who are uncertain or ambivalent towards the environment; and (4) those who are negative, disregarding

or dismissive towards the environment. These positions reflect beliefs towards the environment, generally reflecting Milton's (1991) environmental worldviews and myths of nature. The identification of concepts related to the precautionary principle and environmental "limits" substantiate these environmental attitudes (O'Connor *et al.*, 1999; Mather and Chapman, 1995; Middleton, 2003).

This chapter also highlights that survey respondents and focus group participants shared their understandings of "climate change"; "carbon reduction"; and the causes and consequences of climate change. These understandings demonstrate that human activities are a key dimension to considerations of the specific terminology, yet demonstrate that addressing climate change is a substantial theme within the minds of the public when considering the positive and negative consequences of climate change. Box 5.15 summarises the main findings relating to awareness and understanding of "climate change"; "carbon reduction"; and the causes and consequences of climate change.

Box 5.15: Awareness and understandings of (addressing) climate change: A summary of main findings

Awareness and understanding of "climate change"

Consistent with previous studies (Sturgis and Allum, 2004; Whitmarsh, 2009a), respondents principally identified fluctuations in weather and climate patterns, the (human) causes, and impacts, of climate change. Respondents were four times more likely to identify human causes of climate change over natural causes (Whitmarsh, 2009a). Participants' understanding of "climate change" was predicated specifically on the causes and consequences of climate change. Yet, here, participants identified the theme of addressing climate change, indicating that taking action (i.e. alternative methods of energy production) would minimise the causes. The consequences of climate change were related to the secondary (melting ice caps) and tertiary impacts (loss of habitats) of a warming world. It was clear that higher levels of understanding were related to direct observation and experience of climate change, and by those who had engaged with literature discussing specific causes and impacts.

Awareness and understanding of "carbon reduction"

While respondents defined "carbon reduction" in a literal sense (49.3%), and a further 15.2% were unsure of its definition, this demonstrates that recognition of the term is much lower than "climate change" (DEFRA, 2007), indicating that use of the term is not commonplace amongst media outlets, therefore influencing familiarity and understanding of the term (Boykoff and Boykoff, 2007; Whitmarsh, 2009a). Yet, some respondents did identify specific approaches to reduce carbon emissions (i.e. using less, or alternative sources of, energy; changing behaviours and lifestyles; and

reducing individual/domestic carbon footprints). While familiarity of the term may be lower than "climate change", a minority of respondents understand that they associate human activities to be a cause of, and solution to, addressing climate change. This, however, suggests that the majority do not hold this view and are reluctant to change their lifestyle (Kempton, 1991), and do not associate their own actions as contributing to, or solving climate change (Upham *et al.*, 2009). Yet a minority of respondents did indicate a level of resistance to addressing climate change, reflecting that action involves "making sacrifices" to individual lifestyles. Participants' responses were consistent with respondent's statements insofar as they identified specific measures to address climate change.

Awareness and understanding of the causes of climate change

Respondents principally identified anthropogenic causes of climate change (90.5%), consistent with previous studies (Whitmarsh, 2009a) and with findings related to understandings of "climate change", that the most common cause of climate change was pollution, and people. The use of the term "us" when referring to the contribution of human activities towards climate change suggests a level of personal and collective responsibility (Lorenzoni and Langford, 2005; Uzzell, 2010). Respondents also noted that overpopulation was a cause of climate change, particularly with respect to concepts of sustaining substantial numbers of people in a world where energy intensive lifestyles are an aspiration and development goal. Highlighted as a moral concern about climate change, that exacerbating global carrying capacities (Middleton, 2003) and increased numbers of people polluting was a main cause of climate change.

Awareness and understanding of the consequences of climate change

Overall, respondents identified more negative consequences of climate change, than positive outcomes, consistent with previous studies (Whitmarsh, 2009a). The negative outcomes identified closely align with those impacts regularly mentioned by (government) information campaigns and media reports of climate change (Boykoff, 2008; DEFRA, 2009; Liu *et al.*, 2009; Capstick *et al.*, 2013). With respect to addressing climate change, respondents identified that there would be negative economic impacts that would result. This finding suggests that during times of economic difficulty (the time at which this survey was conducted), attitudes towards environmental issues climate change alter, and principally identify the benefits and costs of environmental issues (Rosen, 1981; Upham *et al.*, 2009). This may also substantiate findings in Chapter 6 that action taken to address climate change is done so for more tangible and financial benefits (Brandon and Lewis, 1999; Stern, 2000). Yet, increasing awareness of, and changing behaviours to address, climate change were considered positive outcomes, suggesting that sustainability is a normative concept (Middleton, 2003; Elliot, 2006; Wilson, 2010). This finding is not consistent with previous studies (i.e. Whitmarsh, 2009a), as no respondents identified solutions to address climate change. Therefore, members of the public identify that there is a need to address climate change, suggesting that the issue resonates with, and concerns, some members of the public to the extent that it should be addressed.

Additionally, survey respondents highlighted the sources of information that they engage with to develop their knowledge of climate change related topics, and the frequency to which respondents hear, and discuss, such issues. Box 5.16 summarises the main findings.

Box 5.16: Engaging with sources of information on climate change: A summary of main findings

Engaging with sources of information on climate change

The most common sources of information noted by respondents of gaining information about climate change related issues were by mass media: television programmes, newspapers and radio, consistent with previous studies (Whitmarsh, 2009a). Yet, what is not consistent is that respondents do not identify more reliable sources featuring "expert" material, such as journals and scientists, identified in previous studies as the most trusted sources of information (DEFRA, 2009; Whitmarsh, 2009a). Consequently, climate change related information is related through the medium of mass media, which may subsequently influence or change pre-existing attitudes and understanding towards the issue (Nickersen, 1998; Gavin, 2009; Upham *et al.*, 2009).

Hearing about, and discussing, climate change related information

Regularly hearing about, and discussing, particular information (in this context addressing climate change) can trigger associated cognitive, affective and behaviour responses (McKenzie-Mohr and Smith, 1999). Respondents identified that they primarily hear about climate change related topics on a weekly or monthly basis, suggesting that a third of respondents are regularly exposed to such information, either consciously or unconsciously. It is noted that respondents do not discuss climate change related topics on a regular basis as often as they hear them. Only 11% of respondents indicated they discuss climate change issues on a regular (daily-weekly) basis. This may indicate numerous points, that respondents: (1) may not be aware that some of the issues they do discuss relate to (addressing) climate change; (2) do not discuss such topics because of a lack of genuine engagement with the issue; or (3) do not feel that the issue is important within the context of everyday lives, unless directly impacting upon them, substantiating the existence of a "psychological distance" (Giddens, 2009; Gifford *et al.*, 2009; Devine-Wright, 2013).

Chi-squared analysis indicates those educated at college level or above; believe protecting the environment is important; employed full time; and middle aged are more likely to hear about, and discuss, climate change related information more regularly. These findings may suggest that those who regularly engage with climate change information reflect levels of awareness of, and concern for, climate change (Anker-Nilssen, 2003; DEFRA, 2007; Eurobarometer, 2009; Upham *et al.*, 2009).

The results in this chapter (Boxes 5.14 and 5.15) suggest that addressing climate change is a substantial theme in the public understandings of "climate change", "carbon reduction", the consequences of climate change, environmental worldviews, and subsequently the number of people that nature's resources can sustain, influenced beliefs of environmental protection for wildlife and future generations. This thesis also explored public attitudes towards climate change and indicates that the public hold varying attitudinal positions towards addressing climate change. Moreover, respondents and participants indicated their scepticism towards aspects of (addressing) climate change and their attitudes towards reducing personal carbon emissions. Box 5.17 highlights the main findings.

Box 5.17: Attitudes towards (addressing) climate change: A summary of main findings

Attitudes towards climate change

Just over half of all respondents (55.9%) stated that they were personally concerned about climate change, while a quarter (24.7%) stated they were not concerned, and one-fifth (19.4%) indicated they were unsure about whether they were concerned about climate change. Concern for, and attitudes towards, climate change vary amongst different demographic and environmental values. Chi-squared analysis demonstrates that these findings are consistent with previous studies: those with pro-environmental values; educated at college level or above; and engage with (hear about and discuss) climate change on a regular basis are more likely to be concerned (Poortinga *et al.*, 2002; Anker-Nilssen, 2003; Hargreaves *et al.*, 2003; Eurobarometer, 2009).

Attitudes towards addressing climate change

However, what is not consistent with previous studies is the amount of those that provide an attitude statement relating to addressing climate change as part of their concern towards climate change. This was unprompted, suggesting that respondents genuinely consider addressing climate change, substantiating previous findings in this chapter that for some respondents, the issue resonates strongly to the extent that individuals believe it should be addressed. However, those who were not concerned also provided addressing climate change attitudes. These attitudes can be located along a continuum (Figure 5.6), ranging from "engaged" and "concerned" attitudes, through those who are more "detached" and ambivalent towards addressing climate change ("uncertain"), to those who hold "apathetic" and "dismissive" attitudes. Focus group participants also justified the existence of these six attitudinal positions. These attitudinal positions considered the causes and consequences of climate change; engagement with climate change related information; and the level of concern this generates. The key dimension to these

attitudes lies in consideration of whether, and how, climate change should be addressed and the level of concern that arises (Section 5.5.2.1 to 5.5.2.6).

Climate change scepticism

In this study, 32.5% identified they were "sceptical" about a dimension of (addressing) climate change. 11.8% of respondents noted their scepticism related to the natural causes of climate change, broadly consistent with previous studies (Downing and Ballantyne, 2007). Yet, "scepticism" was related to four dimensions: (1) causes of climate change; (2) addressing climate change; (3) consequences of climate change; and (4) climate change as a scientific conspiracy and uncertainty. The number of respondents defined as "sceptical" in this study is higher than previous studies (BBC World Service, 2007; Downing and Ballantyne, 2007; Whitmarsh, 2011), yet respondents noted rational doubts and concerns that may not necessarily be defined as "scepticism", particularly responses towards addressing climate change indicating doubt over the uncertainty, and efficacy, of solutions to effectively mitigate climate change.

Attitudes towards reducing carbon emissions

Positive attitudes towards reducing personal carbon emissions suggests that respondents in this study readily identify financial benefits of taking action, followed by environmental benefits. This finding suggests that action taken to address climate change is done so mainly for more tangible and financial benefits (Brandon and Lewis, 1999; Stern, 2000; Whitmarsh, 2009a). Few responses here related to improvements in awareness and behaviour changes, which may be explained by the dominant indication of negative consequences highlighting that action is time consuming, demanding and costs money, contrary to the most common response of the advantages of taking action. These responses are highly rated when evaluating the negative dimensions of environmental behaviours (Vining and Ebreo, 1990; Oskamp *et al.*, 1991; Perrin and Barton, 2001). Focus group participants highlighted slightly different dimensions to their attitudes towards taking action. Specifically, participants identified that taking action out of concern for future generations and wildlife was a responsibility of individuals; yet substantial barriers to action exist, primarily over the cost of sustainable alternatives such as solar panels (Jackson, 2011). Additionally, participants discussed the efficacy of their actions; other people's actions; and habitual behaviour, particularly in the context of habits being a positive notion that sustains pro-environmental actions (Verplanken, 2011).

From these findings, it is clear that addressing climate change is an issue that is firmly situated within the minds of the public. Although the results here suggest that climate change and, by extension, addressing climate change is not an issue at the forefront of important issues facing individuals, consistent with previous studies (Giddens, 2009; Ockwell *et al.*, 2009; Devine-Wright, 2013), it does suggest the beginning of a shift in attitudes towards climate change. Specifically, this result indicates that attitudes have shifted from whether climate change is occurring and

whether humans are the cause (O'Connor *et al.*, 2002; Lorenzoni and Langford, 2005) to whether, and how, climate change should be addressed. This finding is particularly significant, as respondents were not prompted specifically about *addressing* climate change.

Chapter 6 explores behavioural responses towards addressing climate change; and residents' understanding of sustainable living, and their evaluations of whether their actions constitute a sustainable lifestyle. Moreover, Chapter 6 also details the enablers and barriers of a sustainable lifestyle from the perspective of participants.

CHAPTER 6: EXPLORING BEHAVIOURAL RESPONSES TOWARDS ADDRESSING CLIMATE CHANGE: OPPORTUNITIES FOR, AND CHALLENGES TO, SUSTAINABLE LIVING

6.1. INTRODUCTION

This chapter follows on from Chapter 5 to continue this part of the thesis focusing on analysis and presentation of results, exploring actions towards the issues of addressing climate change and perspectives towards sustainable living. Consequently, it addresses the second research question in section 1.6.

Box 6.1: Overview of chapter

In this chapter, Section 6.2 explores the multitude of actions that survey respondents and participants undertake to address climate change. This section also explores the reasons why residents are not prepared to take measures to reduce their carbon emissions.

Section 6.3 explores focus group participants' understandings of, attitudes towards, and considerations of the enablers and barriers to, sustainable living. Section 6.4 concludes by summarising and describing the main findings of this chapter.

6.2. ACTIONS TOWARDS ADDRESSING CLIMATE CHANGE

6.2.1. Willingness to take action to address climate change

Overall, 437 respondents (70.6%) stated that they would be prepared to take measures to address climate change. With respect to individual communities: 69.1% of respondents in Blacon (*n*=150), 67.3% (*n*=132) and 75.2% of respondents (*n*=155) in Congleton and Northwood stated they would be prepared to take measures.

Chi-squared analysis highlights where respondents who are prepared to take measures to reduce their carbon emissions differ significantly between individuals with different characteristics (Table 6.1).

Table 6.1: Variation between respondents' willingness to take measures to reduce their personal carbon emissions		
Willingness to take action to address climate change	**Groups with significantly higher proportions of responses**	
	Percentage	**Characteristic**
	48%	Hear about climate change information on a daily-weekly basis (x^2=158.814, df=4, p<0.000)
	29.2%	Gain climate change information from radio sources (x^2=39.608, df=1, p<0.000)
	52.9%	Gain climate change information from newspapers (x^2=51.617, df=1, p<0.000)
	34.1%	Discuss climate change information on a monthly basis (x^2=159.003, df=4, p<0.000)
	92.9%	Believe protecting the environment is important (x^2=276.910, df=2, p<0.000)
	77.8%	Those who are concerned about climate change (x^2=319.032, df=2, p<0.000)
	77.8%	Hold an "engaged" or "concerned" attitude towards climate change (x^2=325.024, df=5, p<0.000)
	82.6%	Not sceptical about a dimension of (addressing) climate change (x^2=168.971, df=1, p<0.000)
	17.8%	Member of environmental organisation (x^2=19.439, df=1, p<0.000)
	38.9%	Readership of environmental magazines (x^2=62.235, df=1, p<0.000)
	46.5%	Viewership of environmental programmes (x^2=82.229, df=1, p<0.000)
	58.4%	Educated to further education level or above (x^2=30.813, df=1, p<0.000)
	45.3%	Employed full time (x^2=130.062, df=5, p<0.000)
	48.3%	Ages 36-55 (x^2=35.248, df=5, p<0.000)
Not prepared to take measures	44%	Hear about climate change information on a monthly basis (x^2=158.814, df=4, p<0.000)
	21.4%	Gain climate change information from newspapers (x^2=51.617, df=1, p<0.000)
	68.1%	Never discuss climate change information (x^2=159.003, df=4, p<0.000)
	42.3%	Unsure about whether protecting the environment is important (x^2=276.910, df=2, p<0.000)
	65.4%	Those who are not personally concerned about (addressing) climate change

		(x^2=319.032, df=2, p<0.000)
	39.6%	Hold an "apathetic" attitude towards climate change (x^2=325.024, df=5, p<0.000)
	71.4%	Sceptical about an element of (addressing) climate change (x^2=168.971, df=1, p<0.000)
	7.1%	Readership of environmental magazines (x^2=62.235, df=1, p<0.000)
	8.2%	Viewership of environmental programmes (x^2=82.229, df=1, p<0.000)
	62.1%	Educated up to secondary level (x^2=30.813, df=1, p<0.000)
	35.7%	Unemployed (x^2=130.062, df=5, p<0.000)
	47.8%	Ages 18-35 (x^2=35.248, df=5, p<0.000)

Box 6.2 interprets the main findings from the chi-squared analysis, and the significant differences between individuals with different characteristics and willingness to take behavioural responses.

Box 6.2: Differences between individuals and willingness to take behavioural responses

Chi-squared analysis indicates that those who hear about climate change related issues on a frequent (daily to weekly) basis, and discuss climate change on a monthly basis, were more likely to take measures to reduce their carbon emissions. Conversely, those who hear climate change related issues on an infrequent basis, and never discuss climate change topics, were more likely to state that they were not prepared to take measures. This may reflect greater understanding of (addressing) climate change and the actions individuals can take to reduce their emissions (Hargreaves *et al.*, 2003). Higher proportions of those who gain climate change information from radio sources and newspapers were also more likely to take measures, and may reflect the attention given to the issue through radio and print sources thus influencing concern for addressing climate change (Hargreaves *et al.*, 2003).

With respect to their attitudes towards the environment and (addressing) climate change, those who believe that protecting the environment is important and are personally concerned about climate change were most likely to take measures. Conversely, those who were unsure about whether protecting the environment was important and not personally concerned about climate change were not prepared to take measures to reduce their carbon emissions. With respect to the identified six attitudinal positions towards (addressing) climate change (Figure 5.6), those who hold an "engaged" or "concerned" attitude were also more likely to take measures, whereas higher proportions of those who held an "apathetic" attitude were more likely to state they would not be prepared to take action. These findings reinforce the point that willingness to undertake behavioural responses to address climate

change are consistent with the individuals' attitude (Lorenzoni and Langford, 2005), and do not indicate substantial "value-action" gaps (Blake, 1999; Kollmuss and Agyeman, 2002).

Climate change scepticism also influences preparedness to take measures to reduce personal carbon emissions. Unsurprisingly, higher proportions of those who stated they were sceptical about an element of (addressing) climate change were more likely to state they would not be willing to take measures (Upham *et al.*, 2009).

Higher proportions of those who indicated they were educated to further education level and above, and being employed full time were more likely to take measures. Whereas those who are educated up to secondary level and unemployed were less likely to take action to reduce their carbon emissions. These findings may reflect levels of understanding of the causes, and solutions, to climate change, particularly the nature of personal behaviour (DEFRA, 2002; Hargreaves *et al.*, 2003; Eurobarometer, 2009).

Higher proportions of those aged 36-55 were also more likely to take measures in comparison to higher proportions of younger age groups (18-35) who were most likely to state that they would not be prepared to take action. Once again, this may reflect awareness, understanding and concern for (addressing) climate amongst these demographics (Hargreaves *et al.*, 2003; Upham *et al.*, 2009), particularly as younger age groups are less concerned about climate change, and as a result, less likely to take behavioural responses (Anker-Nilssen, 2003).

Previous studies have highlighted the role of environmental values and education towards 'willingness' to take action on climate change, although this was not necessarily personal action (O'Connor *et al.*, 1999; O'Connor *et al.*, 2002; Poortinga *et al.*, 2004). The results from the chi-squared analysis clearly identify the strong influence of attitudes towards the environment, and particularly towards addressing climate change, on willingness to take personal behavioural responses to climate change. It is acknowledged however that these results are based on self-reporting of willingness to take action (POST, 2010), and it is unknown whether respondents will follow through with their declarations that they will take action, or even what will activate their behavioural responses. As a result, it is acknowledged that people's awareness and perceived importance of environmental issues (i.e. climate change) do not always translate into actions to change behaviour (Jackson, 2005; Darnton, 2008; Verplanken, 2011).

Focus group participants were also asked about their willingness to take action to address climate change. All but one participant (NP7) stated that they would be willing to take action to reduce their carbon emissions. Participants explained that alongside their willingness to take action, they already take measures to address climate change (Section 6.2.2).

6.2.2. Behavioural responses to addressing climate change

Given the rise of local sustainable development and the emphasis placed on individual actions for sustainability, incorporating a range of behavioural responses is necessary for transitions towards sustainable, low-carbon living (Barr and Gilg, 2006). Those respondents who stated that they would reduce their carbon emissions were asked to note what actions they would be prepared to do (Table 6.2), and how frequently they would undertake those measures (Section 6.2.3).

Table 6.2: Resident's actions towards addressing climate change

Action	Blacon	Congleton	Northwood	Total
Recycling	27 (18%)	23 (17.4%)	42 (27.1%)	92 (21.1%)
Use less energy (electricity/heating)	24 (16%)	29 (22%)	30 (19.4%)	83 (19%)
Switch lights/appliances off	16 (10.7%)	15 (11.4%)	14 (9%)	45 (10.3%)
Drive less	18 (12%)	11 (8.3%)	12 (7.7%)	41 (9.4%)
Energy efficient/efficient appliances	13 (8.7%)	7 (5.3%)	17 (11%)	37 (8.5%)
Loft/wall insulation	4 (2.7%)	5 (3.8%)	15 (9.7%)	24 (5.5%)
Use public transport	11 (7.3%)	5 (3.8%)	6 (3.9%)	22 (5%)
Switch to green energy	4 (2.7%)	10 (7.6%)	6 (3.9%)	20 (4.6%)
Make small changes around the home	12 (8%)	6 (4.5%)	1 (0.6%)	19 (4.3%)
Solar panel	4 (2.7%)	6 (4.5%)	7 (4.5%)	17 (3.9%)
Change diet/eat less meat	2 (1.3%)	11 (8.3%)	2 (1.3%)	15 (3.4%)
Learn more about what to do	7 (4.7%)	0 (0%)	2 (1.3%)	9 (2.1%)
Walk/cycle more	5 (3.3%)	0 (0%)	1 (0.6%)	6 (1.4%)
Buy/use a smart meter	3 (2%)	3 (2.3%)	0 (0%)	6 (1.4%)
Less holidays/fly less	0 (0%)	1 (0.8%)	0 (0%)	1 (0.2%)
Total	*n*=150 (100%)	*n*=132 (100%)	*n*=155 (100%)	*n*=437 (100%)

Note: percentage of total respondents is not inclusive of responses concerning those who do not take action (*n*=182), and is based on respondents who do take action to address climate change (*n*=437, 100%).

Table 6.2 illustrates that respondents did not overwhelmingly favour one measure to reduce their carbon emissions over another. Of those who stated that they would be prepared to take action, the most common responses that residents mentioned

were recycling (*n*=92, 21.1%); using less energy around the home (by reducing heating and electricity use) (*n*=83, 19%); and switching lights/appliances off (*n*=45, 10.3%). Surveys exploring environmental actions highlight a much higher proportion of respondents indicating they would recycle, instead of undertaking other energy related actions (Upham *et al.*, 2009; Whitmarsh, 2009b). This result is consistent with other surveys suggesting that few people are prepared to take measures beyond recycling and domestic energy conservation (O'Neill and Hulme, 2009; Whitmarsh, 2009b).

Out of the fifteen actions respondents highlighted, only three of which are not energy related actions. This result suggests that respondents identify reducing energy consumption mitigates the causes of climate change. These measures were noted as being significant to reducing carbon emissions, and as an indicator of behavioural change on behalf of the respondent.

More substantial forms of behavioural change including driving less (*n*=39, 8.9%); installing green technologies (i.e. solar panels) (*n*=17, 3.9%); and using a smart meter (*n*=6, 1.4%) were mentioned, yet these measures were not mentioned as commonly as behavioural changes that were considered easier to integrate into their lifestyles. These findings are consistent with other surveys identifying that actions including recycling; driving less; walking/cycling more; reducing energy consumption are commonly mentioned actions individuals are willing to undertake (Whitmarsh, 2009b; Peters *et al.*, 2010).

However, higher proportions of individuals willing to drive, and fly, less are also reported in other studies (Whitmarsh, 2009b; Peters *et al.*, 2010). This is not the case in this study, as only one respondent indicated they would fly less. This demonstrates that although attitudes towards climate change are broadly positive and willingness to take behavioural responses is high (Box 6.2), the actions identified are not sufficient to substantially address climate change. Consequently, respondents favour behavioural responses that are considered easier, more convenient and which they would be comfortable to integrate in their daily lives

(Whitmarsh, 2009b). It is worth noting that in response to surveys in general, respondents often claim to be more environmentally conscious than they actually are and want to appear to be willing to undertake pro-environmental actions (Barr, 2004; POST, 2010).

Box 6.3 highlights the behavioural responses focus group participants listed that they were willing to, and already, undertake to address climate change.

Box 6.3: Behavioural responses to addressing climate change identified by focus group participants

Of those that stated they were willing, or did, take action to reduce their carbon emissions, participants listed a range of behavioural responses:

- Recycling
- Car share with family, friends or work colleagues
- Use of public transport
- Do not own a car (conscious decision)
- Use a bike to travel/get around
- Allotment (locally grown food)
- Recycle water
- Freecycling (trading items instead of disposing of them or recycling)
- Reuse shopping bags
- Using the car less
- Reduce energy use/turn heating down in the home
- Lower emissions car
- Walk short distances (instead of car)
- Vegetarian/Pescetarian
- Energy saving lightbulbs
- Double glazing
- Energy efficient appliances
- Previously built a home that was energy efficient

6.2.2.1. Willingness to take behavioural responses

Section 5.5.4 explored focus group participants' knowledge about, and feelings towards, reducing their carbon emissions. Alongside this, participants discussed what behavioural responses they would be willing to take to address climate change:

> "I would be willing to drive less… if there were better public transport routes" (BP1),
>
> "Recycling… because it's obviously linked in but… we're not really reducing the emissions that way… if there's anything that we can do… but there doesn't seem to be any advice" (BP2),

> "I'd be willing to grow my own vegetables if I had the space and time to do it. I'd be prepared to have solar panels but they may be a bit costly" (CP1),
>
> "If someone would provide me a list of companies that are the most environmentally damaging I would be prepared not to buy from those companies, but I'm not sure it's the type of thing I would go out of my way to research" (NP5),
>
> "I wouldn't be prepared to do anything. I can't see why I should really, and it's not important enough for me to do" (NP7),
>
> "I'd probably look to see what I could potentially do first, to see if I would want to do it" (NP8).

Participants stated that they would be willing to take a range of behavioural responses, including recycling; growing their own vegetables; driving less; installing solar panels; and not purchasing products from companies that are not (considered to be relatively) environmentally friendly. These actions demonstrate that within a focus group forum, participants are willing to share their considerations towards actions they would be prepared to take. Some of the actions stated are consistent with those mentioned by survey respondents in Table 6.2. However, participants also highlighted that they would take other actions, consistent with notions of low-carbon living (Whitmarsh and O'Neill, 2011).

Yet, despite being willing to take behavioural responses, participants identified that there were barriers to taking action, including the space to grow their own food; the costs to install renewable energy technologies; improved bus routes to drive less; and information that would suggest what other actions participants could undertake. These factors relate to the barriers towards sustainable living (Section 6.3.4).

NP7 stated that they would not be prepared to take measures because they could not see the reasons why they should take action, and did not believe it was an important aspect to them. Section 6.3.4 explores in more detail the enablers and barriers to personal action and sustainable living, focusing on the reasons why respondents are not willing to take behavioural responses. Although NP8 states that

they would be willing to see what they could do, NP8 is also very cautious over their choice of words, indicative by the use of the word "potentially". This demonstrates that NP8 is hesitant towards taking action, and does not feel comfortable with committing themself to reducing their carbon emissions in a focus group forum. This suggests that there are other considerations, contextual and situational factors that affect environmental actions (Barr *et al.*, 2003).

6.2.2.2. Behavioural responses currently being taken

Participants commented that they take a range of behavioural responses that reduce their carbon emissions:

> "We don't own a car… so I think if there's any other way to do something we would" (BP2),
>
> "Buying items like the fridge and the freezer we bought deliberately because they were better models and were environmentally friendly" (BP3),
>
> "I do try to use my car less. I car share if [I'm] going on big trips with people. I try to only use my car when I need it. I recycle" (BP4),
>
> "From our point of view, I can't see what we can do any more because all the garbage is recycled, the garden refuse is recycled and our bin… some people argue that they need theirs emptying once a fortnight, we could go once a month" (CP2),
>
> "We're pretty good… if you visit relatives and friends in other areas, they don't do the recycling" (CP3),
>
> "[Recycling is the] biggest thing that we do in our household. We do try to turn lights off in rooms when they're not in use. I will try to do an efficient run… in my day-to-day work… to where I need to go. I think loft insulation… and… the windows are double glazed windows" (NP2).
>
> "When I go to the toilet in somewhere like McDonalds, I don't use the hand drier, I dry my hands on my jeans. I recycle water. I wash things out and I rinse the drains out with it as well. I'm fond of switching lights off, even energy saving bulbs because you're still using energy" (NP1),

> "I've had a newer car which is better on emissions than the old big seven seater car. I reuse my beautiful Marks and Spencer's bags every week at Tesco's and actually, that makes you feel better by doing something like that. It's only small" (NP2),
>
> "I recycle [and]… we sort our food waste. [I] sometimes get the train. I do use the park and ride when I go to town" (NP4),
>
> "I'm already a pescetarian" (NP5).

Participants indicated that they take a multitude of low impact and high impact actions to address climate change. Low impact actions that participants currently take are: recycling; recycle garden waste; water recycling; and switching lights off. Participants also stated that they take a multitude of high impact actions to reduce their carbon footprint including using their car less (and using public transport or through planning daily activities); not eating meat; car sharing; purchasing energy efficient appliances; installing loft insulation; and double glazing.

The language used by participants suggests that to some extent behavioural responses are planned, and the actions taken are done so with the potential environmental impact in mind, reflecting impact-oriented actions (Whitmarsh, 2009b). BP3 notes that they "deliberately" bought better models of their fridge and freezer because they were more environmentally friendly, and had a high energy rating on energy performance certificates. NP2 suggests that during their workday they plan a more efficient navigation, so that it is more efficient and use less fuel. The language used also demonstrates that participants feel strongly towards the behavioural responses they take. CP3 states that they consider their level of activity to be "pretty good", particularly in comparison to other people, whereas NP2 notes that they gain personal satisfaction from reusing their "beautiful Marks and Spencer's bags" when they go shopping. These findings suggest that participants feel positively about the actions they take to address climate change, from the perspective of the impact they have i.e. not using other plastic bags and waste going to landfill. These actions reflect those described by Whitmarsh (2009b) as being intent-oriented actions.

CP2 and CP3 believe that they take enough action and are unable to see what other measures they can take, from their perspective, reinforced by CP2 noting that their general rubbish would only need to be emptied "once a month", in comparison to others who need their waste emptying more frequently. CP3 also relates their actions to other people's level of action. The comments by CP2 and CP3 indicate that participants are aware of the level of impact of their responses; the frequency which they undertake such actions; and other people's actions. These comments validate the findings in Figure 6.2 regarding the relationship between the intensity and frequency of behavioural responses.

These findings demonstrate that participants are open to, and already, taking a range of behavioural responses towards addressing climate change. These comments suggest that they consider, and feel strongly (and positively), towards the actions they currently take. As such, the actions undertaken here suggest that actions addressing climate change are undertaken as a result of intent rather than impact (Whitmash, 2009b) for participants in this research.

6.2.2.3. Future behavioural responses

Whilst discussing the actions currently taken to address climate change, participants also discussed the actions they would take in the future. Separate from their willingness to take action in the near future, participants also referred to long-term actions to address climate change, envisioning what their future lifestyles would be like:

> "It's about thinking about your future footprints and what you can do there as well" (NP2),
>
> "I can drive so it is something that's partly cost at the moment, but we have reasonably good public transport network[s]… the only reason I could foresee is if we change jobs" (BP3),
>
> "Or for long distance[s]. We quite happily use [public] transport… I've been here for 6 years and I've never felt the need to have a car… we're used to using

public transport. If we did get a car then we'd use it for long journeys or holidays and sometimes the short journey to work" (BP2),

"The long term plan for us, because we've just moved house [we] would see if there was more stuff to do. Once you've got your house sorted, your income fixed and you know where everything is going you can be more flexible, put a bit aside and put like… a solar panel on the roof" (BP3).

The statements by BP2, BP3 and NP2 suggest that they are already considering taking future behavioural responses. BP2 and BP3 comment specifically about the behavioural responses they would take in the future, including continue taking public transport; using a car for long journeys or to work; and considering putting financial resources aside to purchase renewable energy technologies. BP2 specifically comments that they would only use a car for journeys that are necessary (i.e. getting to work on time). The choice of words used is important. There is less certainty from BP2 about owning a car as they state, "if we did get a car", substantiating their position that they have lived in their current location for 6 years and have "never felt the need" to own a car and that they were "used to using public transport", suggesting that this usage of public transport is a habitual behaviour.

Other participants were less certain on their future behavioural responses, and suggested that their future actions would be determined by external factors:

"If someone would come and suggest something else that we could do…" (CP2),

"…and if there was a financial incentive to do it then I would do but I think a lot more other people would do it as well" (CP1),

"We don't need a financial incentive. As pensioners, we just need something to do" (CP2),

"To be honest I do enough. I do my little bit but I really do expect technology to take over and make it a more automatic thing and it just happens as a matter of course. Because people, are on the whole lazy. Science is the answer to all of this… with technology. That's where the answer will come from" (CP5).

Participants in Congleton were more cautious about future behavioural responses, beyond those that they were already willing to undertake (Section 6.2.2.1) and those that they currently take (Section 6.2.2.2). Participants justified their position by commenting that external factors would determine future behavioural responses, including the provision of information and suggestions about other actions that they could do, whereas CP1 suggested financial incentives to encourage future actions, to which CP4 agreed. CP2 counters this point by jokingly stating that taking action, and by extension living sustainably, provides them "as pensioners [with] something to do", indicating that older generations may devote (more) time to undertaking environmental actions, than younger generations.

There is an expectation from CP5 who asserts that they do enough, that there is a limited role for human actions, and science with the application of technological solutions will take precedence in addressing climate change in the future. These comments reinforce findings from previous studies that technological solutions receive more support than willingness to change behaviour (O'Connor *et al.*, 1999; Moloney *et al.*, 2010). CP5 argues that with the application of science and technology, addressing climate change will become automatic, taking away conscious decision-making to act sustainably. This validates earlier findings (Section 5.5.4) that removing choices to act and forcing people to be green would enable sustainable living.

While some participants are clear that they are considering behavioural responses to address climate change, others are less certain. This demonstrates that actions addressing climate change in the future are dependent upon a number of influencing factors: consideration of financial incentives; information relating to additional actions to be taken; application of scientific and technological solutions; cost; changes to personal circumstances; public transport accessibility; income; and consideration of actions that can be integrated into participants' lifestyles. Not only do these findings demonstrate a temporal dimension to individual actions that address climate change, but illustrate that participants are cognitively and

behaviourally engaged with addressing climate change. That is to say that participants consider factors that will influence their ability to take action presently and in the future, considering the influencing factors on their, and wider society's, ability to take (further) action.

The statements by BP2, BP3 and NP2 demonstrate that they are already considering the actions they will take in the future to address climate change, and are aware of the impacts their actions will have, presently and in the future. This is an important finding as this level of consideration illustrates a deep level of engagement with addressing climate change, indicating: (1) sensitivity to potential changes in (future) circumstances; (2) consideration of other actions that could be taken; (3) preparation to set aside financial resources for higher impact measures (i.e solar panels); (4) the necessity of sustained action to address climate change; and (5) the integration of pro-environmental actions as part of a sustainable lifestyle. These findings illustrate that amongst some participants there is a deep level of cognitive, affective and behavioural engagement with addressing climate change. This finding also indicates implications for engaging those participants who did not consider these aspects to their actions towards addressing climate change to consider greater engagement with (future) behavioural responses and their associated environmental impacts.

6.2.2.4. Rebound effects

Participants also noted that they acknowledge that there are some factors that result in actions that are harmful to the environment, thus resulting in a rebound effect:

> "We recycle, I know that in our house when the thermostat goes up, I try to turn it down but then everyone else that walks past it turns it up, and then I turn it down again" (CP1),
>
> "But the small fact we have 5 cars in our household doesn't play a part?" (CP4),
>
> "Yes, but we do try" (CP1),
>
> "So some things go up, and some things go down?" (I),
>
> "We all work in different areas so the emissions are dotted around" (CP4),
>
> "Are the cars being used at the same time?" (CP2),

"No they're not" (CP1),

"Only 4 of them" (CP4),

"I think what bothers me is that they'll put the heating on "oh, I'm freezing" put the heating on, the fire on and then open the windows with their shorts and t-shirts and that really bugs me. I'm like "for god sake!"" (CP1),

"It's like being on holiday… you're just comfy" (CP4),

"So yeah, we all try to do our bit" (CP1),

"Like leaving the lights on so the burglars don't break in, when really, we could just turn the lights off and lock the door" (CP4),

"Or buy a real dog" (CP5),

"Or buy a dog that's double the size of a cat at least" (CP4),

"But would that be carbon friendly? That dog would be pooing everywhere" (CP1),

"But you could recycle it into your compost" (CP4),

"But you could buy biodegradable poo bags" (CP1),

"You know what James' parents have been doing? They have been leaving watering cans outside so if it rains, they collect the rainwater and use that" (CP4),

"We do that" (CP1),

"We haven't done that!" (CP4),

"We've got a mop bucket out there" (CP1),

"Yeah we mop our floor with the mop water [from the rain], that's why it smells!" (CP4).

These comments highlight numerous aspects of actions taken to address climate change. Firstly, and most noticeably, the tone in which participants discussed these views were done so in a jokingly, yet positive, manner. Despite this, participants were relaxed and discussed what actions they believe helps towards addressing climate change, but also acknowledge what they are aware of what does not help. Unknowingly, participants were outlining the rebound effect, that they took action to reduce their environmental impact in one area, yet their actions increased their environmental impact in others.

Secondly, the conversation highlights what actions are leading participants to be more environmentally friendly, and what activities are having a detrimental impact. For instance, CP1 indicates that they recycle and reduce the heating in their house when other people increase the temperature, however CP4 reports that the ownership of 5 cars in that household, with the regular use of 4, contributes a negative impact on their attempts to take action. The effort by CP4 and CP5 to reduce their carbon emissions is negligible in comparison to owning 5, and regularly using 4, cars and leaving lights on when all members of the household are out.

Thirdly, the actions that participants do identify as being negative for the environment relate to those that are taken for comfort reasons. CP1 identifies that they will repeatedly turn down their thermostat when other people act unsustainably. CP4 justifies their position that "it's like being on holiday", identifying that they feel comfortable in wearing minimal attire and view increasing the heating as an element of comfort. This finding suggests that everyday actions related to comfort are far removed from considerations of environmental impact. Similar to what Blake (1999) and Kollmuss and Agyeman (2002) describe as the "value-action gap", this finding indicates an "action-impact gap" where there is no immediate link between the actions of individuals and consideration of environmental impacts. It is only upon reflection that participants consider these impacts in open discussion.

Fourthly, after acknowledging that despite some of their activities having negative impacts, participants note that they do try to take some actions to reduce their environmental impacts. CP1 repeatedly acknowledges the negative impact and mentions that "yes, but we do try" and that "we all try our bit". These statements are an important dimension to rebound effects. Attempts are made to "talk-up" the positive actions that are taken to offset, and reduce, their negative impacts. These points by CP1 are repeated frequently whenever CP4 highlights an action that results in a negative impact. This overcompensation of highlighting positive actions results in articulating strong affective engagements with other people's negative actions.

These findings reinforce the results that participants are aware of how human activities (Section 5.3.2.1 and 5.3.2.2), particularly their own actions and idiosyncratic habits, influence (addressing) climate change both positively and negatively. The awareness of these actions and outcomes suggest that participants subconsciously attempt to reassure themselves that they are taking action to address climate change. In a world dominated by mass media reports of (addressing) climate change, participants' responses begin to sound like broad environmentalism. Although some individuals are environmentalists, the rest of us know how to sound like environmentalists (Barr, 2004). These findings support the assertions by Barr (2004), indicating that individuals have learnt the language and semantics of environmentalism, and are capable in responding in what has become a socially accepted manner.

Essentially, participants' discussions of their actions are leading them to "talk-up" their efforts to address climate change. This leads to a "false environmentalism" where action is taken to address major environmental issues, but have minimal impact; are not taken out of genuine concern for the issue; sustained over time; attributed attention (during initial development through to continuation); or allocated resources comprising time, effort, or true importance. Consequently, this results in individuals being capable of trying to sound like environmentalists (Barr, 2004) and leads to participants taking action for the sake of taking action in order to be seen, and labelled, as (broadly) pro-environmental.

6.2.2.5. Categorising measures for addressing climate change: technical and behavioural responses

Actions can be categorised into two broad categories: technical measures, defined as interventions that alter the built form of energy using systems of dwellings, and behavioural measures, that seek to change the energy use behaviour of residents (Abrahamse *et al.*, 2005; Reeves, 2009). These categories often overlap, for example the success of technical measures is often reliant on successful householder engagement and some behavioural measures involve the installation of physical equipment (i.e. smart meters) (Reeves, 2009). In this study, it is interesting to note

that some respondents stated that they would switch to using green energy, consider installing a solar panel or buying/using a smart meter. The decision to undertake these measures could be considered a behavioural measure albeit underpinned by the appropriate technology. These measures can also be considered primarily technical interventions following the installation of the technology (e.g. solar panels), residents are no longer behaviourally active unless other actions are being undertaken. It is possible that the uptake of particular measures, whether behavioural or technical, could lead to potential "spillover effects" (Evans *et al.*, 2013; Thogersen, 2013).

The majority of individual actions undertaken do not constitute a significant behavioural change, nor one that involves significantly reducing householders' carbon footprints. It is not surprising that the vast majority of residents do not take substantial measures, a finding consistent with previous studies (Ockwell *et al.*, 2009; Whitmarsh, 2009b). Those actions that would constitute a significant impact on reducing an individuals' carbon footprint (i.e. driving less, switching to green energy, installing green technologies) are not frequently mentioned as measures respondents are willing to undertake. To that end, environmental behaviours that are commonly practised (i.e. recycling) are readily cited by respondents, which may reflect their real concern for climate change despite a substantial number of "engaged" and "concerned" respondents (Section 5.5.2).

This finding illustrates numerous points. Despite a generally high awareness of the causes and impacts of climate change, and positive attitudes towards (addressing) the issue, respondents are in some ways reluctant to undertaking measures that would result in substantial changes to their lifestyles. Additionally, this finding could indicate that despite significant levels of awareness and pro-environmental attitudes (Section 5.2 and 5.3), other barriers exist that inhibit meaningful progress to reducing carbon emissions, or there are (perceived) difficulties in undertaking high impact actions (Section 6.2.5).

Limited uptake of high impact actions could illustrate that addressing climate change is for many a "back of the mind issue" (Giddens, 2009); one that does not take precedence in the everyday lives of residents in comparison to other priorities (illustrated in Section 5.2.1). This point may lead to "Giddens' Paradox"; that because the dangers of climate change are not tangible, immediate or visible, many people will take a relaxed approach and not start to reduce their emissions until they observe significant effects which have a direct impact on them (Giddens, 2009).

6.2.3. Frequency of undertaking behavioural responses to address climate change

Survey respondents who were prepared to take measures were also asked about the frequency to which they would be willing to undertake the specified actions they previously stated (Table 6.4).

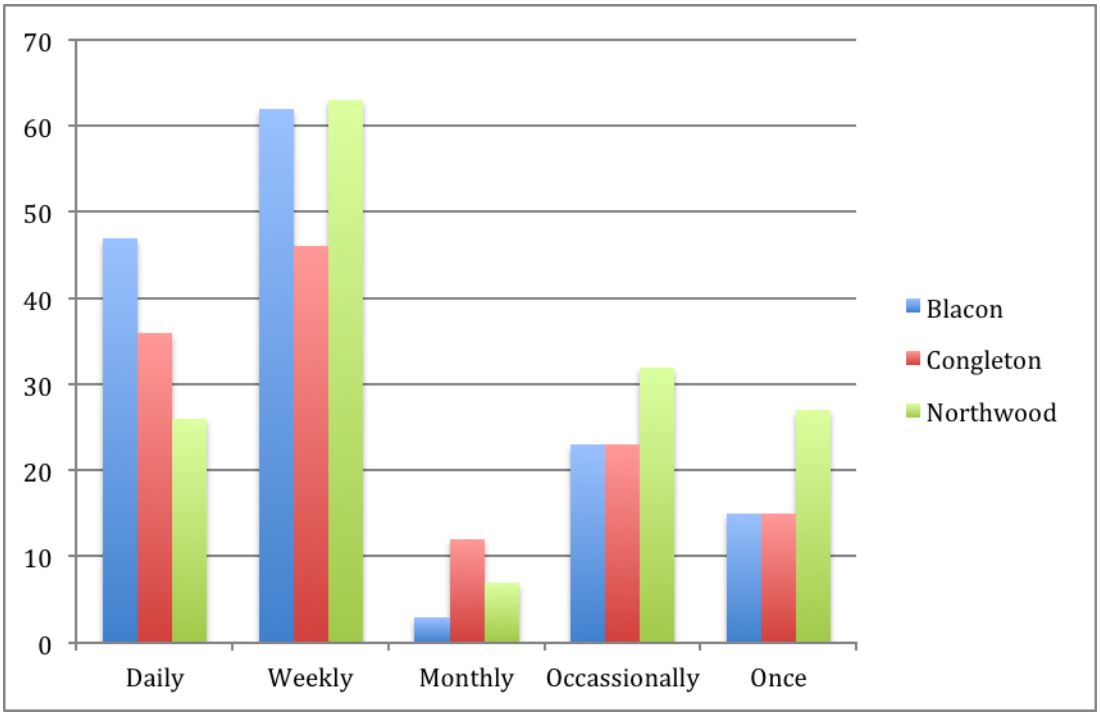


Figure 6.1: Frequency to which respondents are willing to take measures to reduce carbon emissions

64.1% of respondents (*n*=280) stated that they would be willing to undertake behavioural responses on a frequent basis (daily or weekly). This substantial proportion of respondents who indicate frequently undertaking behavioural

responses to address climate change could signify the belief that regularly taking measures (regardless of their impact) makes them more environmentally active. This finding indicates that respondents would be reasonably, and frequently, behaviourally engaged, with addressing climate change. Again, however, respondents could be claiming to be more environmentally conscious than they actually are, so that they appear to be more willing to do something to address climate change (Barr, 2004; POST, 2010). Conversely, 157 respondents (35.9%) indicated that they would undertake measures on a less frequent basis (monthly, occasionally or once). Those suggesting they would only take measures once, did so with respect to identifying technical measures (i.e. installing loft/wall insulation and solar panels).

The relationship between the frequency to which respondents undertake actions and specific behavioural responses are explored in more depth in Section 6.2.4.

6.2.4. Categorising behavioural responses to addressing climate change: Intensity and frequency

Sections 6.2.2 and 6.2.3 raise questions about the impact of measures respondents are willing to undertake, and the frequency they are prepared to do them. With respect to public engagement (Section 2.6.2), it is of interest to explore how 'active' respondents are with their behavioural responses and the level of impact their actions would have on reducing carbon emissions. The connection between the types of action undertaken and the frequency those behaviours was undertaken is, thus, explored in more detail (Box 6.4).

Box 6.4: Categorising behavioural responses: Intensity and frequency

Actions such as recycling, switching lights and appliances off and installing energy efficient light bulbs were designated as low impact actions in comparison to behaviours such as driving less, switching to green energy and changing one's diet were noted as being high impact actions (Upham *et al.*, 2009). These measures were associated against how regularly respondents undertook these measures. For example, frequent actions were undertaken on a daily or weekly basis whereas, actions undertaken on an occasional, monthly or single time basis were accorded a low frequency action.

This categorisation of the intensity of carbon reduction actions (i.e. the level of impact those actions have with respect to reducing carbon emissions) and the frequency to which those actions are undertaken provides four distinct classifications (excluding those who take no action). The first classification identifies actions that are low impact actions that are undertaken on a low level frequency (occasionally, monthly or single time basis). The second category identifies actions that are, again, low impact actions but undertaken more frequently (on a daily or weekly basis). The third classification identifies actions that are considered high impact actions that are done on an occasional, monthly or single time basis. The final, and fourth, category identifies actions that are high impact actions that reduce more carbon emissions than low impact actions, undertaken on a frequent (daily or weekly) basis. These four classifications illustrate that there is a relationship between the intensity (level of impact) of particular actions and the frequency to which they are undertaken, and are illustrated diagrammatically in Figure 6.2.

Although not a 'category' as such, the axis of Figure 6.2 is marked as "0", representing those respondents who specified that they were not prepared to take measures to reduce their carbon emissions. Therefore, Figure 6.2 acts as a model encompassing those who do, and do not, take action towards addressing climate change.

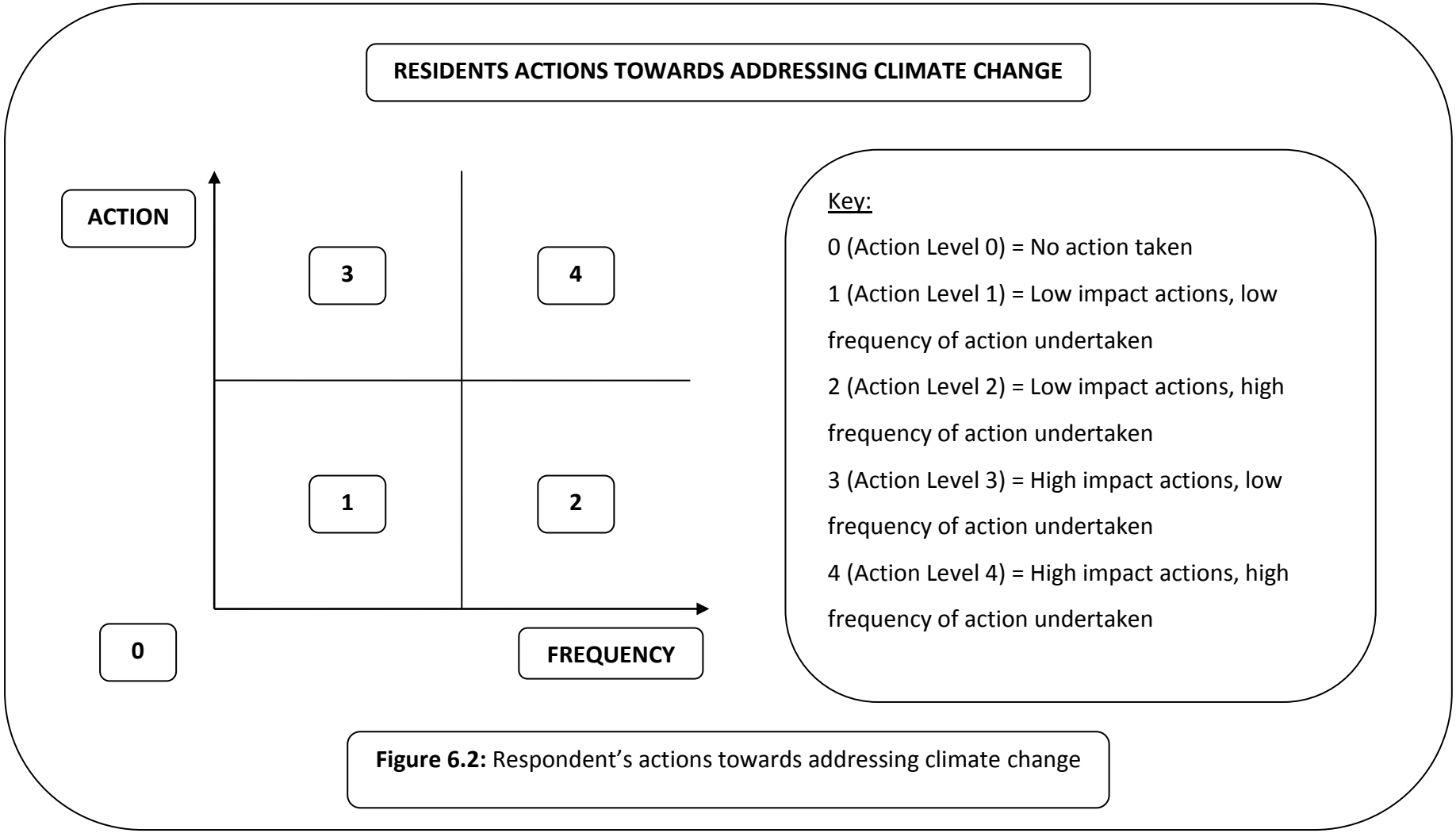


Figure 6.2: Respondent's actions towards addressing climate change

Figure 6.3 illustrates the action levels undertaken in each community, under the model illustrated in Figure 6.2.

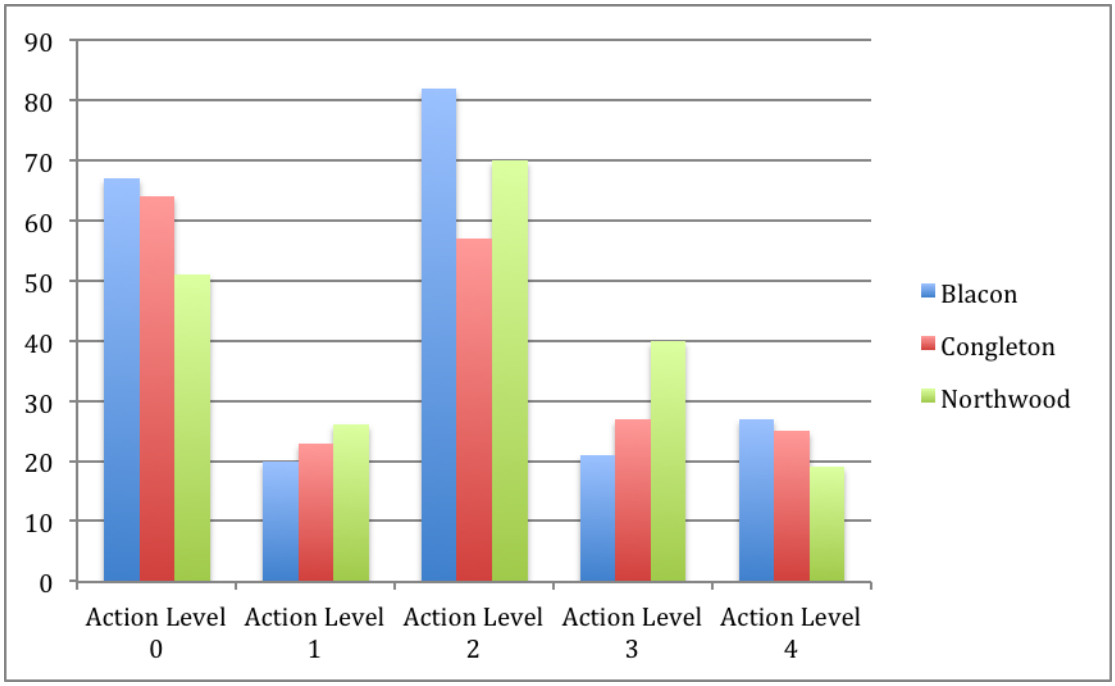


Figure 6.3: Action Levels towards addressing climate change

The action level most undertaken by residents in all three communities (excluding "0", where no action is taken), are recorded as being at level two (*n*=209, 47.8%), identified as low impact actions including installing energy efficient light bulbs; using less energy; and recycling. Action level two also indicates that respondents were willing to undertake these measures on a regular (daily/weekly) basis. With respect to the individual communities, Blacon and Congleton residents were more likely to take high impact actions on a frequent basis (Level 4) (12.4% and 12.8% respectively), more so than residents in Northwood (9.2%). Yet, the proportion of residents not taking action is lower in Northwood (24.8%) than residents in Blacon (30.9%) and Congleton (32.7%).

While the single category with the largest number of responses relates to action level two (excluding where no action is taken), this result does not indicate an overall preference for undertaking the associated 'level of impact' measures and the

frequency to which they are completed. Previous studies highlight that the choice of undertaking particular pro-environmental behaviours are based upon a multitude of factors, such as convenience, cost and ability to complete these actions (Upham *et al.*, 2009; Whitmarsh, 2009b). In some instances, the choice to undertake one action to reduce carbon emissions could sometimes be in preference to another behaviour, or because the necessary requirements to perform one action are not met (Upham *et al.*, 2009).

Excluding Action Level 0, 279 respondents (63.8%) noted that they would be prepared to undertake low impact actions to address climate change. This indicates that out those who would be prepared to take measures, 36.2% (*n*=158) considered high impact actions. Extrapolated further, this indicates that 25.5% of all respondents (*n*=619) would be willing to take high impact actions. These findings are broadly consistent with those found in other studies, with the exception of willingness to fly less (Whitmarsh, 2009b; Peters *et al.*, 2010). However, focus group participants indicate that community projects may provide support for individuals to reduce their carbon footprint across their lifestyle (Section 6.3.4.9).

Despite the attempts of Figure 6.2 to categorise the relationship between the impact of behavioural responses (Table 6.2) and the frequency to which measures are undertaken (Figure 6.1), it is acknowledged that the behavioural responses indicated by respondents are influenced by external factors (i.e. the installation of physical equipment) (Reeves, 2009), or appropriate facilities (i.e. community recycling) (Werner and Makela, 1998). Although the majority of actions indicated in Section 6.2.2 are behavioural responses rather than technical measure, other reported actions including recycling and installing solar panels are dependent upon the installation of equipment or appropriate level of community services that may substantially influence the frequency to which particular measures are undertaken. This reinforces the point made in Section 6.2.2.5 that those who indicated particular actions such as installing solar panels could be considered as primarily a technological intervention, and to an extent, are no longer behaviourally active in reducing their carbon emissions unless other actions are being undertaken.

Chi-squared analysis indicates where action levels differ significantly between individuals with different characteristics (Table 6.3), and highlights groups with significantly higher proportions of responses within each action level illustrated in Figure 6.2.

Table 6.3: Action levels towards addressing climate change and variation between respondents

Action Level	Percentage of total respondents	Groups with significantly higher proportions of responses	
		Percentage	Characteristic
0	29.4%	44%	Hear about climate change on a monthly basis (x^2=201.046, df=16, p<0.000)
		21.4%	Gain climate change related information from newspapers (x^2=64.212, df=4, p<0.000)
		68.1%	Never discuss climate change (x^2=185.579, df=16, p<0.000)
		42.3%	Unsure about whether protecting the environment is important (x^2=281.578, df=8, p<0.000)
		65.4%	Not personally concerned about climate change (x^2=353.305, df=8, p<0.000)
		39.6%	Respondents who hold “apathetic” attitudes towards climate change (x^2=362.733, df=20, p<0.000)
		71.4%	Sceptical about a dimension of climate change (x^2=172.490, df=4, p<0.000)
		92.9%	Do not read magazines with an environmental focus (x^2=69.035, df=4, p<0.000)
		45.6%	Educated to secondary level (x^2=45.477, df=16, p<0.000)
		35.7%	Unemployed (x^2=141.762, df=20, p<0.000)
		47.8%	Those educated 18-35 (x^2=55.551, df=20, p<0.000)
1	11.3%	30.4%	Hear about climate change on an occasional basis (x^2=201.046, df=16, p<0.000)
		23.2%	Gain climate change related information from radio sources (x^2=48.459, df=4, p<0.000)
		50.7%	Gain climate change related information from newspapers (x^2=64.212, df=4,

			p<0.000)
		36.7%	Discuss climate change related issues on an occasional basis (x^2=185.579, df=16, p<0.000)
		84.1%	Those who believe protecting the environment is important (x^2=281.578, df=8, p<0.000)
		52.2%	Respondents who are personally concerned about climate change (x^2=353.305, df=8, p<0.000)
		27.5%	Respondents who hold "concerned" attitudes towards climate change (x^2=362.733, df=20, p<0.000)
		78.3%	Those who are not sceptical about an element of climate change (x^2=172.490, df=4, p<0.000)
		29%	Read magazines with an environmental focus (x^2=69.035, df=4, p<0.000)
		42%	Watch programmes with an environmental focus (x^2=91.367, df=4, p<0.000)
		40.6%	Educated to further education (college) level) (x^2=45.477, df=16, p<0.000)
		47.8%	Employed full time (x^2=141.762, df=20, p<0.000)
		30.4%	Those aged 36-45 (x^2=55.551, df=20, p<0.000)
2	33.8%	37.3%	Hear about climate change on a weekly basis (x^2=201.046, df=16, p<0.000)
		25.5%	Gain climate change related information from radio sources (x^2=48.459, df=4, p<0.000)
		45.5%	Gain climate change related information from newspapers (x^2=64.212, df=4, p<0.000)
		34.9%	Discuss climate change related issues on a monthly basis (x^2=185.579, df=16, p<0.000)
		94.3%	Those who believe protecting the environment is important (x^2=281.578, df=8, p<0.000)
		78%	Respondents who are personally concerned about climate change (x^2=353.305, df=8, p<0.000)
		40.2%	Respondents who hold "engaged" attitudes towards climate change (x^2=362.733, df=20, p<0.000)
		83.7%	Those who are not sceptical about an

			element of climate change (x^2=172.490, df=4, p<0.000)
		43.2%	Read magazines with an environmental focus (x^2=69.035, df=4, p<0.000)
		37.8%	Watch programmes with an environmental focus (x^2=91.367, df=4, p<0.000)
		36.8%	Educated to further education (college) level) (x^2=45.477, df=16, p<0.000)
		39.7%	Employed full time (x^2=141.762, df=20, p<0.000)
		43.1%	Those aged 36-55 (x^2=55.551, df=20, p<0.000)
3	14.9%	68.2%	Hear about climate change on a daily-weekly basis (x^2=201.046, df=16, p<0.000)
		33.8%	Gain climate change related information from radio sources (x^2=48.459, df=4, p<0.000)
		65.9%	Gain climate change related information from newspapers (x^2=64.212, df=4, p<0.000)
		38.6%	Discuss climate change related issues on a monthly basis (x^2=185.579, df=16, p<0.000)
		94.3%	Those who believe protecting the environment is important (x^2=281.578, df=8, p<0.000)
		87.5%	Respondents who are personally concerned about climate change (x^2=353.305, df=8, p<0.000)
		48.9%	Those who hold “concerned” attitudes towards climate change (x^2=362.733, df=20, p<0.000)
		88.6%	Those who are not sceptical about an element of climate change (x^2=172.490, df=4, p<0.000)
		47.7%	Read magazines with an environmental focus (x^2=69.035, df=4, p<0.000)
		59.1%	Watch programmes with an environmental focus (x^2=91.367, df=4, p<0.000)
		38.6%	Educated to further education (college) level) (x^2=45.477, df=16, p<0.000)
		52.3%	Employed full time (x^2=141.762, df=20, p<0.000)
		52.3%	Those aged 36-55 (x^2=55.551, df=20, p<0.000)
4	15.1%	57.8%	Hear about climate change on a daily-weekly basis (x^2=201.046, df=16, p<0.000)

		31.8%	Gain climate change related information from radio sources (x^2=48.459, df=4, p<0.000)
		60.6%	Gain climate change related information from newspapers (x^2=64.212, df=4, p<0.000)
		21.1%	Gain climate change related information from family and/or friends (x^2=10.822, df=4, p<0.029)
		42.3%	Discuss climate change related issues on an occasional basis (x^2=185.579, df=16, p<0.000)
		95.8%	Those who believe protecting the environment is important (x^2=281.578, df=8, p<0.000)
		90.1%	Respondents who are personally concerned about climate change (x^2=353.305, df=8, p<0.000)
		45.1%	Those who hold "engaged" attitudes towards climate change (x^2=362.733, df=20, p<0.000)
		76.1%	Those who are not sceptical about an element of climate change (x^2=172.490, df=4, p<0.000)
		22.5%	Members of environmental societies (x^2=21.668, df=4, p<0.000)
		40.8%	Read magazines with an environmental focus (x^2=69.035, df=4, p<0.000)
		49.3%	Watch programmes with an environmental focus (x^2=91.367, df=4, p<0.000)
		31%	Educated to degree level and above (x^2=45.477, df=16, p<0.000)
		50.7%	Employed full time (x^2=141.762, df=20, p<0.000)
		56.4%	Those aged 36-55 (x^2=55.551, df=20, p<0.000)

Box 6.5 interprets the main findings from chi-squared analysis, and the significant differences between individuals with different characteristics and associated action levels (Figure 6.2).

Box 6.5: Differences between individuals and associated action levels
Unsurprisingly, respondents who are unsure about the causes of climate change; are

sceptical about climate change; seldom hear about, and never discuss, climate change related information do not take action to address climate change. Consistent with their attitudes towards protecting the environment and (addressing) climate change, these respondents are less likely to take measures to reduce their carbon emissions. These findings are consistent with those of other studies (O'Connor *et al.*, 1999; O'Connor *et al.*, 2002; Anker-Nilssen, 2003; Hargreaves *et al.*, 2003; Upham *et al.*, 2009; Whitmarsh, 2009a; Whitmarsh, 2009b; Peters *et al.*, 2010)

Respondents who hear about climate change related issues on an occasional basis are most likely to take low impact actions on an infrequent basis (Level 1). However, those who hear about climate change on a weekly basis are more likely to take higher impact actions (Level 3 and 4), but there is little difference between those who take actions on a regular basis. This may, again, reflect greater understanding of (addressing) climate change and the actions individuals can take to reduce their emissions (Hargreaves *et al.*, 2003). The frequency to which respondents discuss climate change related issues have a varied influence on the intensity and frequency of undertaking carbon reduction behaviours. Respondents who discuss climate change issues on an occasional basis, were more likely to undertake high impact actions frequently (Level 4). This may suggest that those who actively discuss climate change related information are actively engaged with the issue, and understand the need for high impact actions on a frequent basis (Lorenzoni and Langford, 2005). In comparison, those who discuss climate change on a monthly basis were more likely to undertake low impact actions frequently (Level 2) or high impact level actions on an infrequent basis (Level 3).

Respondents who consider protecting the environment an important issue were more likely to take higher impact actions. As shown in Table 6.3, the proportion of those who believed protecting the environment was important increases throughout the action levels (Levels 1 through 4). This may suggest that those who are more concerned, understand that, and are more willing to take, actions that have more of an impact to reduce their personal carbon footprint (DEFRA, 2007; Eurobarometer, 2009; Upham *et al.*, 2009).

Similarly, respondents who were personally concerned about climate change were more likely to take higher impact measures to reduce their carbon emissions. The frequency to which respondents would be prepared to undertake measures were strongly related to particular attitudes towards (addressing) climate change (Figure 5.6). Those holding "concerned" attitudes were more likely to take actions on an infrequent basis (Levels 1 and 3), whereas those who hold "engaged" attitudes towards climate change were more likely to take undertake those actions frequently (Levels 2 and 4). It is perhaps due to the nature of their concern about climate change respondents who hold "engaged" attitudes are more likely to understand that regularly taking action will have more of an impact in reducing personal carbon footprints, or consider frequently taking actions reduces carbon emissions more effectively.

With respect to demographic variables, those who educated to degree level or above were more likely to take high impact actions frequently (Level 4), consistent with findings from other studies (Anker-Nilssen, 2003; Poortinga *et al.*, 2004).

Moreover, those employed full time were more likely to take higher impact actions (Level 3 and 4). Additionally, those aged 36-45 were more likely to take actions in the higher level brackets (Levels 3 and 4) whereas those aged 46-55 were more likely to take low impact actions on a frequent basis (Level 1). These findings are consistent with previous studies, suggesting that older generations are more likely to take low impact actions (i.e. recycling), along with younger generations (i.e. walk more or public transport) (DEFRA, 2002; Eurobarometer, 2009).

6.2.5. Non behavioural responses towards addressing climate change

Survey respondents who stated that they were not prepared to take behavioural responses (*n*=182; 29.4%) indicated that they chose not to do so for a multitude of reasons (Table 6.4).

Table 6.4: Respondents reasons for not undertaking action to reduce their carbon emissions

Reasons for no action	Blacon	Congleton	Northwood	Total
No point/need to address issue	16 (23.9%)	17 (26.6%)	15 (29.4%)	48 (26.4%)
Not important/not a priority	6 (9%)	13 (20.3%)	13 (25.5%)	32 (17.6%)
Apathy	15 (22.4%)	7 (10.9%)	3 (5.9%)	25 (13.7%)
No perceived benefits to action	16 (23.9%)	4 (6.2%)	4 (7.8%)	23 (12.6%)
Powerless to solve issue	3 (4.5%)	8 (12.5%)	4 (7.8%)	15 (8.2%)
Disbelief in human-induced climate change	7 (10.4%)	3 (4.7%)	4 (7.8%)	14 (7.7%)
Time consuming	4 (6%)	2 (3.1%)	4 (7.8%)	10 (1.6%)
Not thought about it/don't understand	1 (1.5%)	7 (10.9%)	3 (5.9%)	11 (1.8%)
Inconvenience/difficult	0 (0%)	3 (4.7%)	1 (2%)	4 (0.6%)
Total	*n*=67 (100%)	*n*=64 (100%)	*n*=51 (100%)	*n*=182 (100%)

Note: percentage of total respondents is not inclusive of responses concerning those who do take action (*n*=437), and is based on respondents who do not take action to address climate change (*n*=182, 100%).

The most common responses for non behavioural responses were that respondents indicated that there was no point or need to address climate change (*n*=48, 26.4%) or simply that climate change was not important or a priority to them (*n*=32, 17.6%). These responses are exemplified in the following quotes:

"Not sure… it's important to do anything about" (BR62)

"I don't see the point in doing something" (CR33)

"It's not important to me – I have other priorities" (CR56)

"Nothing is wrong with the climate so there is nothing we need to do to sort it out" (NR159)

"It's not an important issue to me so I don't see why I should do something" (NR103)

Some respondents noted that they were powerless to solve climate change: "If it's really bad, then there is nothing I can do to help on this level" (BR30) and "If it's happening then there is not a lot we can do about it" (NR196). The fact that some respondents feel powerless to address the issue and meaningfully reduce their carbon emissions is illustrative that individuals feel somewhat overwhelmed by the issue (Aitken *et al.*, 2011). Other respondents indicated that they believed climate change to be a natural phenomena and stated that they saw no reason to address the issue as a result: "It's natural! No need to care about the environment or change the way we live" (NR175) and "It's not caused by humans and it's not our responsibility to do something about it" (CR84). What CR84 suggests here is that addressing climate change can be related to moral concerns and indicates that responsibility for reducing carbon emissions lies elsewhere beyond the community level. These findings are consistent with other surveys, placing responsibility for addressing climate change with national governments and organisations (Lorenzoni *et al.*, 2007; Ockwell *et al.*, 2009).

The language used by respondents who were unwilling to undertake measures reveals that some respondents hold a negative attitude towards personal carbon reduction, indicative of a dismissive response towards the concept of addressing climate change as a whole, and not just at the community level.

The enablers of, and barriers to, personal action on addressing climate change were factors that participants discussed and felt strongly towards, and are outlined and discussed in more depth in Section 6.3.4.

6.3. PERSPECTIVES TOWARDS SUSTAINABLE LIVING AND THE RELATIVE IMPORTANCE OF ADDRESSING CLIMATE CHANGE AT THE COMMUNITY LEVEL

Whilst collating the survey data, it became apparent that respondents identified particular concepts whilst conceptualising addressing climate change. There was a clear identification that addressing climate change at the community level would influence people's lifestyles. It is interesting that particular words such as "lifestyle", "living" and "environmentally friendly" were mentioned frequently. Figure 6.4 demonstrates the frequency these words were raised in the survey.

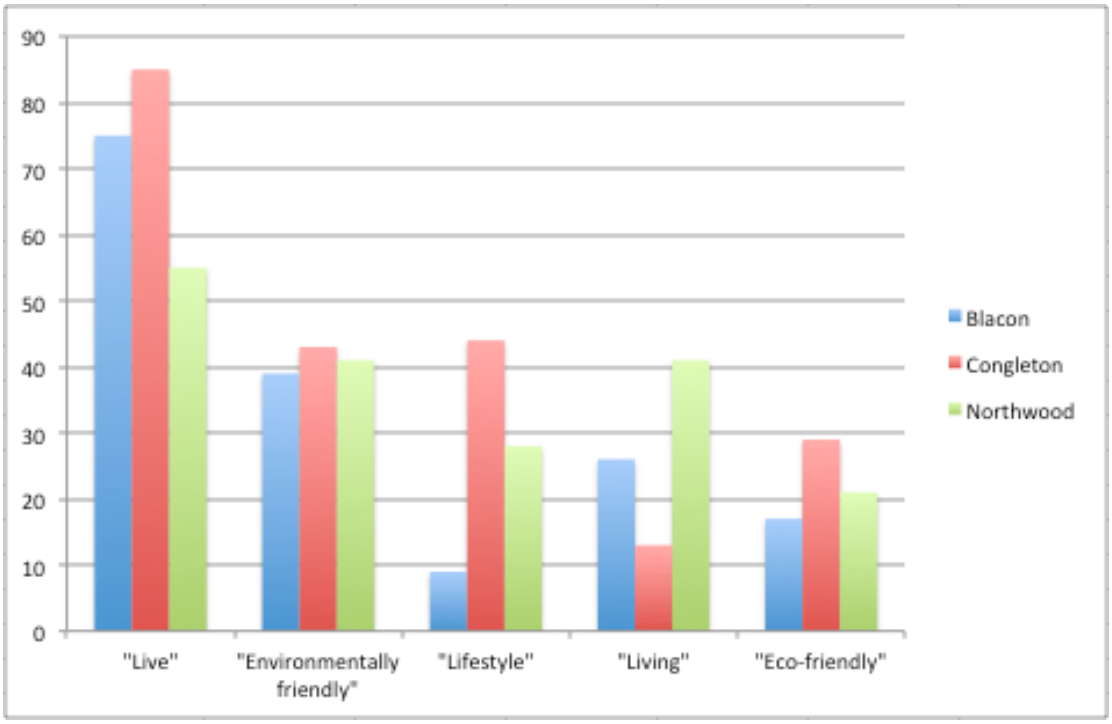


Figure 6.4: Themes emerging from questionnaire survey

These themes were exemplified in the following quotes:

> "Turning to living more environmentally friendly" (BR134),
>
> "Make us re-evaluate our lifestyles" (BR185),

"We all need to live in a way that is more environmentally friendly" (CR116),

"Living in a way that meets your needs but doesn't compromise the environment" (CR127),

"People will need to live more environmentally friendly lifestyles" (NR34),

"Changing our lifestyles to become more environmentally friendly" (NR39).

Addressing climate change is often seen as a contentious issue due to its associations with behavioural and lifestyle change (Tjernstrom and Tietenberg, 2008), and exploring lifestyle choice has largely been ignored and regarded as too subjective and value-laden (Taskforce on Sustainable Lifestyles, 2010). These results demonstrate the ways in which survey respondents have shaped the research process. Few respondents identified (with) the concept of carbon neutrality within their responses as a goal of addressing climate change and instead identified more strongly with the concept of lifestyles. Consequently, focus groups sought to explore participants' views on sustainable lifestyles and behavioural responses to address climate change. It is this association of addressing climate change with the concepts of being "environmentally friendly" and "lifestyle", rather than carbon neutrality that has been explored in more depth in the focus groups.

6.3.1. Understanding the concept of sustainable lifestyles

Focus group participants were asked what they understood by the term "sustainable lifestyles", and identified a multitude of themes; particularly highlighting that sustainable living was intimately connected to the environment:

"It's about living within your means" (BP1),

"Being eco-friendly or like when people try to build eco-friendly houses and things like that" (CP4),

"Living your life and using things that do produce emissions and burn fuel but then you're doing your bit… so you're reducing the amount of emissions that you make" (NP4),

"Basically keeping it to a minimum" (NP3),

"So you're trying to balance it" (NP2),

> “A sustainable lifestyle is what you can contribute to the environment” (NP6),
> “Living in a way that doesn't harm the environment” (NP5).

There was consensus among participants that living sustainably corresponded to understandings of becoming eco-friendly and living in a manner that is not detrimental to the environment. Specifically, participants highlighted that actions including recycling and reducing fossil fuel usage would reduce negative environmental impacts. Participants acknowledged that while human activities will inevitably produce carbon emissions, taking action to maintain a balance constituted a sustainable lifestyle. Without direct reference to the concept, participants here are in fact describing the process of carbon neutrality. Whilst results from the questionnaire survey highlight that respondents identify more strongly with terms like “environmentally friendly”, the term “sustainable lifestyles” has connotations with carbon neutrality and (addressing) climate change.

These comments demonstrate that actions are an important component of understandings of sustainable living as well as what this means in practice. This theme is explored in more detail, with respect to the type of measures participants consider are integral to living sustainably:

> “I read this book one time, through university about how to live [and] produce your own things… growing your food, doing your own recycling… so you’re not necessarily wasting things you’re using… and using things in a better way. Some people that you see just chuck everything in one bin… and you see people with piles of shopping in the supermarket and you think “are you actually going to eat all that food or is it going to feed the bin?” rather than themselves” (BP2),
> “Our house does get quite warm naturally, instead of putting the fans on, that were already installed, we open the windows to get some circulation and it’s not using electricity” (BP3),
> “…not wasting resources… and use natural resources effectively” (CP5),
> “Not living off fossil fuels and using the car less” (NP8).

The actions that participants highlighted vary. These measures vary in terms of (1) type of response; (2) scale; and (3) level of impact.

Firstly, living sustainably is dependent on a range of behavioural responses (e.g. growing your own food), and technical responses (e.g. reducing the use of fossil fuels). This point reinforces an earlier point in Section 6.2.2.5 that survey respondents identified that they would be willing to take a range of behavioural and technical responses (Abrahamse *et al.*, 2005; Reeves, 2009). These measures largely relate to behavioural responses.

Secondly, participants identify a multitude of measures from individual behavioural responses (i.e. recycling) to national level energy alternatives (i.e. reducing fossil fuel usage). Participants recognise that their behavioural responses alone will not bring about sustainable living, and alterations to the way that energy is produced (and consumed) is required. This finding indicates that participants are aware that multiple actions by multiple actors are required, and that the actions taken at a national level including changes to energy infrastructures, will influence individuals' efforts to live sustainably. This suggests that participants acknowledge that without changes to important socio-technical elements, entrenched technological processes will continue to lock individuals into unsustainable lifestyles (Seyfang and Smith, 2007).

Thirdly, participants identify a range of measures that have varying levels of impact on reducing their emissions. Similarly to Section 6.2.4, participants identify responses that have a minimal impact (e.g. recycling) in comparison to those that have a higher impact (e.g. growing their own food, which in turn, reduces the need to purchase food items from supermarkets).

BP2 mentions that their understanding of actions taken stem from their engagement with material related to sustainable living, in this instance, a book. This finding suggests that those who engage with materials related to (addressing) climate

change and sustainability are more aware of specific aspects of sustainable living, and supports the results in Section 5.4 and previous studies (DEFRA, 2009; Whitmarsh, 2009a).

Other participants discussed their understanding related to other, interrelated notions: sustainable living being an achievable concept; established patterns of behaviour; overcoming barriers; reorientating lifestyles to become more localised (i.e. food production); and other people's attitudes towards sustainability:

> "Sustainable lifestyles [are] something that [have to be] achievable [that] you can… make a conscious decision to do but isn't anything that is going to take hours… or become laborious and difficult that you back out. When [recycling] first arrived, the amount of moaning in the neighbourhood was substantial but actually it's helped no end. The amount of black bin bags now that we need to put out is almost negligible. Our black bin used to be overflowing every week. Now, it can be two weeks in and it can be only half full. That gives me a great sense of achievement and pride that we can do that and as a community if everyone does that and takes that initiative, what we're achieving together is sustainable. It's become a pattern of living" (NP2),
>
> "It's second nature" (NP3),
>
> "I think people have become too comfortable in the way that they live, so the thought of change, and when you talk about getting the bus to town [or] growing vegetables in your garden, that to some people is just so drastic compared to what they do like jump in the car… and people couldn't even imagine doing that. I think people really need to consider what they're doing to the environment and be more open to change because I think personally, people's opinions about it, they're not bothered" (NP4).

NP2 states that sustainable lifestyles need to be achievable, and almost questions whether living sustainably is achievable, without becoming difficult and laborious. Reference to barriers previously stated by respondents in Section 6.2.5 are made, but specified as barriers to sustainable living also (Section 6.3.4). Barriers such as

difficultly, inconvenience and time consuming are frequently mentioned when undertaking pro-environmental actions (Vining and Ebreo, 1990; Oskamp *et al.*, 1991; Perrin and Barton, 2001).

Attention is drawn to collective action and previous environmental actions that lead to an evaluation of what constitutes a sustainable lifestyle. Despite the initial reluctance to participate and the positive result of substantially reducing their waste, NP2 notes additional positive outcomes of taking action that has led to a sense of achievement and pride. The language used here is important. Words including "pride" and "achievement" attributed to taking actions illustrate that individuals are engaged not just behaviourally, but also affectively. This demonstrates that, in this instance, behavioural engagement precedes affective engagement, and has done so after recognition of the positive outcomes of taking action, and validates notions of self-perception (Section 2.5.4) (Bem, 1972; Verplanken, 2011).

NP2 asserts that if everyone contributed towards taking pro-environmental actions then the resultant outcomes could be classified as sustainable, due to the collective effort of individuals and the collective impact of actions taken. Collective responsibility and actions are frequently mentioned concepts within individuals' attitudes to addressing climate change (Sections 5.5.2 and 5.5.4). It is this repeated statement of collective action to address climate change and transition towards sustainability that participants identify as a central theme of their understanding. This indicates that participants are aware of the social nature of behaviour (Jackson, 2005; Darnton, 2008), and the impact of individuals acting collectively. This finding suggests that participants are aware of the need for changes in human behaviour to address environmental and sustainable issues (Upham *et al.*, 2009).

The conversation between NP2 and NP4 touches upon concepts relating to normalised behaviours; habits; the relative "comfort" of energy intensive lifestyles; and other individuals' attitudes towards living sustainably and changing their behaviours.

NP4 argues that because people generally have "become too comfortable" with their energy intensive lifestyles, suggestions of sustainable alternatives appear drastic, and individuals would be reluctant to alter their behaviour. Reference is made to other individuals' attitudes towards the environment and sustainable living, indicating that they believe other people are "not bothered". This reference to other people's opinions, despite being negative, suggests that participants are sensitive to the attitudes held by others. NP4 does not indicate whether the people they are making reference to are known or unknown to them, however they believe that others do not consciously consider the environment, or environmental impacts their actions may have. Consequently, these comments reflect that participants are aware of multiple perspectives that individuals hold towards the environment and it's protection (see Section 5.2.1 and Section 6.3.4.6).

The measures that participants recognise as corresponding with living sustainably broadly relate to those responses suggested in Sections 6.2.2.1 to 6.2.2.3. This finding suggests symmetry between understandings of sustainable living and willingness to undertake pro-environmental behavioural responses that may be subconscious deliberation, rather than thoughtful correlation.

6.3.2. Considerations of sustainable living

When asked whether they believed they live a sustainable lifestyle, participants provided varied responses either stating they did, partially did, or did not, consider themselves to be living sustainably, and justified the reasons for their evaluations:

> "I'd say we do now. We've moved… bought a house a couple of months ago. We tried to [before] but the way the nature of our flat was… you couldn't" (BP3),
>
> "We try to sort out most of our rubbish and food rubbish, we put it in the compost bin and put it on the garden" (BP1),
>
> "Oh yeah, completely" (CP2),
>
> "I'd like to think that I was but I wouldn't say so" (CP1),
>
> "I don't think I live a sustainable lifestyle… there's more that we can do" (CP4),

"Partially, there's a lot of things that… I could do more but having said that, I think I do more than what some people might do" (NP4),

"I do think we all have a duty to do something more. I know I do something… but there's a hell of a lot more that I could do" (NP2),

"Well I cycle everywhere and when I don't cycle I get a bus, so I guess that's slightly sustainable but obviously the buses are still burning fossil fuels. I'm not putting another car on the road though" (NP5),

"We partially live a sustainable lifestyle but you can't do a full sustainable lifestyle because of outside forces" (NP6).

Principally, those participants that suggested that they do live or partially live sustainably feel this way because they undertake a multitude of behavioural response that broadly correlate to those mentioned in Sections 6.2.2.1 to 6.2.2.2. Again, this finding demonstrates that participants consider pro-environmental actions to be a key component of a sustainable lifestyle. However, there is a discrepancy between those who identify that they do live sustainably, and those that only believe they partially do so. Participants highlighting that they do live sustainably do so because of the actions they take. Yet, those that stated they partially lived sustainably outlined a number of issues that either restricted them from living sustainably: (1) the need to take more behavioural responses; (2) external forces that inhibit sustainable living, including cost of sustainable alternatives (see Section 6.3.4.2); and (3) personal efficacy and apathy (see Section 6.3.4.5). Similarly, those who stated that they did not live a sustainable lifestyle commented that they did not do enough to be considered sustainable.

6.3.2.1. Consideration of other individuals' attitudes towards sustainable living

Other people's attitudes towards sustainable living were discussed considerably during focus group discussions:

"At first people would be very against it. There will be some people who will just be like "well I'm not doing that, I'm quite happy the way I am" so I think there will need to be a lot of support in enabling those people to be more

positive towards it because the[y] won't want to… "trek somewhere to do something silly". There will be people out there who just don't do anything, so… they would need a lot of help and guidance. You have to make sure that the benefits are there to encourage people to do it" (BP2),

"I suspect you're talking to a group of folk who are like minded… folk who don't give a hoot, who throw litter on the floor and think that somebody else will look after it, but complain vehemently about the state of the place they live in. That's the type of folk whose minds you've got to get into and change" (NP1),

"That's it now. We need to change people's viewpoint that what you're actually doing now is sustainable for the long term" (NP2).

These statements demonstrate that participants do consider others' attitudes towards sustainable living, and perceive that other people may not ascribe the same level of importance to sustainable living as themselves. Participants perceive that other individuals either don't consider sustainable living to be an important issue or state that people would be against it, at least initially. BP2 states that these individuals would be reluctant to change and would require support to enable them not just to act sustainably but to also think more positively about the issue, making reference to what would enable individuals to participate in sustainable living (see Section 6.3.4). NP1 and NP2 concur, and believe that such attitudes towards sustainable living, and by extension environmental issues, need to be changed to address climate change.

6.3.3. The (relative) importance of sustainable living and addressing climate change

6.3.3.1. Sustainable living and addressing climate change as an important issue

The majority of participants stated that they considered sustainable living, and addressing climate change, to be an important issue, and substantiated their responses with respect to other people's (non)participation; future generations; and forcing green behaviours:

"The sustainable living bit definitely is. I think hopefully that can have an effect on climate change because sometimes when you think about the climate… you do think that it's a really big thing, but even if you're doing little bits [it] can help" (BP2),

"Yeah, I think it is. If enough people are doing it" (BP4),

"I think they've got to be, because I think it's not just about the here and now, it's about future generations" (CP1),

"It's not just us, something drastic has to change for future generations" (CP3),

"Being younger, you've got [a] future ahead of you, so surely it's in your own interest that you ensure you get the best outcomes. It's like your own health. If someone said "well if you don't start recycling then it'll affect your health" then you'd do it" (CP4),

"Definitely. I'd like to think that I was trying to do my bit to help the environment and I could do more. My issue is that is what I'm enough compared to others that don't really want bother or really care about the environment. I think that's why there are lot of people wanting to do something, but the fact that other people don't makes them think "why should I bother, why should I be the one to trying to sort this mess out when there's a lot more people that don't want to". A lot of people think they're not going to influence the situation" (NP4),

"Is that called utilitarianism? The greater good for the greatest number of people. People think it needs to be government-led because… you'd feel quite disheartened really with other people's lack of effort" (NP2),

"We don't want to go into a society where we're forced to do stuff but at the same time, but it would be a good thing" (NP1),

"It almost feels like we're just living in the here and now. It is actually like a human right almost. We just need… to think about sustainable lifestyles a lot more instead of this "easy come, easy go" lifestyle" (NP2).

These comments highlight multiple themes that are important to participants' reporting of the importance of sustainable living and addressing climate change.

Participants highlighted that there are interconnections between sustainable living and (addressing) climate change, specifically indicating that living sustainably can reduce the causes of climate change. This suggests that participants are aware that human actions can help to address climate change through sustainable living (Roy and Pal, 2009). Lifestyle choices determine energy consumption, material consumptions and consequent emissions, with 45–55% of total energy use is influenced by consumers' choice of personal transportation, personal services and homes (Schipper *et al.*, 1989; Roy and Pal, 2009). As 60% of carbon emissions are attributable to individual decisions in the UK (Roy and Pal, 2009), behavioural responses taken towards living sustainably will ultimately reduce the causes of climate change.

Other people's participation was identified as integral for sustainable living, and that the concept moved beyond a personal matter and towards a collective issue (Uzzell, 2010). Participants questioned the value of taking action to live sustainably when they identified others not to be taking any. NP4 specifically questions if they are doing enough to compensate for others' non behavioural responses, and suggests this to be a result of their attitudes and lack of concern towards addressing climate change (Section 5.5.2) and sustainable living (Section 6.3.2.1). NP4 identifies a 'negative feedback effect', which results in individuals changing their attitudes and actions because of other people's nonparticipation. This finding presents a challenge for sustainable living, as this results in those who already take action to consider reverting back to unsustainable practices because of a lack of collective action.

Living sustainably was highlighted as important for future generations. This may be due to consideration that the impacts of climate change will become more severe with time, and that these impacts will affect future generations more than themselves (Giddens, 2009; Ockwell *et al.*, 2009). Despite this, participants consider that reducing the impacts for future generations are a motivator for taking action, and therefore believe sustainable living and addressing climate change are an important issue.

Participants identify that government-led changes could force people to take green action and live sustainably. This finding suggests that although reluctant to outright state in favour of such a measure, participants discuss the forcing of behavioural responses positively, indicating a level of acceptability and support. Participants justified this position of forcing green actions arguing that it would do the greatest good for the greatest number of people. Previous research indicates that despite initial public resistance to measures forcing people to be green, the London Congestion Charge was met with improved public support after its introduction (Downing and Ballantyne, 2007; Ockwell *et al.*, 2009). Political support for such measures is limited, as politicians fear public backlash (Ockwell *et al.*, 2009).

Another dimension that participants identify is the notion that addressing climate change and living sustainably is a "human right". Caney (2010) argues that climate change jeopardises some key human rights: the basic right to life, health and subsistence. Participants argue that addressing climate change should become a recognised human right, to protect basic right to life and a healthy environment and atmosphere (Caney, 2010). In this respect, participants identify that there is a "need" for sustainable living and action towards addressing climate change, as this would protect basic rights to life and represent utilitarianism. Participants identify that this would counter the energy-intensive "easy come, easy go" lifestyles adopted by developed nations (Roy and Pal, 2009), and that human rights should take into account carbon emissions leading to the concept of climate justice (Hayward, 2007; Okereke, 2010). This reference to a "disposable society" is explored in Section 6.3.4.6.

However, there were some participants who considered that sustainable living, and addressing climate change, was not an important issue:

> "To a certain degree. I don't think it's a personal thing, I think it's a collective thing. You've all got to play your part, it's just how far you want to go to play your part. But it's not the be all and end all" (NP6),

> "Not really. I don't really care, because I have more important things to think about" (NP7),
>
> "Not necessarily to me, but maybe to future generations" (NP8),
>
> "I do recycle and I do cycle, but I'll do it up to a point and then I get bored. So I'll do a bit of recycling and then I'll think "could that just go in the bin… yeah, probably could!" [then] I'll throw it in the bin with the rest of the black bag waste because it's easier" (NP5).

Apathy towards sustainable lifestyles and other perceived important issues were considered more important than sustainable living (Ockwell *et al.*, 2009). This supports results in Section 5.2 about the relative importance of environmental issues, and Section 5.5.2 concerning attitudes towards addressing climate change. NP8 agrees with NP7 and argues that the issues are of more importance to future generations.

NP5 comments that although they take action to reduce their environmental impact, they get "bored" and revert back to unsustainable practices, and exemplifies this with recycling. This finding suggests that for NP5 there is no intrinsic motivator to continue recycling, and therefore the behaviour is not habitual (Abrahamse *et al.*, 2005). This finding also relates to the (in)convenience of taking action (Section 6.3.4.5). NP6 argues that the issues are important to a certain degree, but not personally, as they consider these issues to be a collective concern (Uzzell, 2010). Within this notion, individuals decide how far they want to go to take action. This finding contradicts other participants suggesting that forcing action would be acceptable to reduce the impacts of climate change.

6.3.3.2. "Mixed Messages": Reporting sustainable living and addressing climate change

A key theme that participants highlighted was the reporting of sustainable living and addressing climate change within the media, and how this influences individuals' attitudes and ascribed importance to such issues:

> "Whenever you see global warming or climate change in the news, it's all "we're doomed, we're all gonna die and the ice caps are going to melt" [or] "this survey said that you've only got this long until the planet blows up". There's all these mad things but you then don't really see that this action will be one way to slow it down" (BP3),
>
> "They never like focus on if by doing this little thing it'll help make a big difference. It just seems to be a lot of negative things. I think that there's a lot of positive things to be doing. So people are doing little things but it always feels like it's a big issue that can never be actually solved" (BP2),
>
> "There is a lot of publicity about… encouragement for it. There should be more, and if people linked it more to benefits personal, because some people aren't really bothered about the environment are they? So to get those people involved as well you emphasise all the benefits, say saving money" (BP4).

Participants identified that there are frequent reportings of (addressing) climate change in the media, however participants suggest that they are often mixed with more tending to focus on the negative dimensions of addressing climate change. BP3 feels that the positive messages of addressing climate change get lost in the enormous negative and alarmist reporting of the impacts of climate change that appear to hide the efficacy of actions addressing climate change.

This finding indicates that participants view addressing climate change to be almost invisible and subsumed by alarmist reporting of the impacts of climate change. BP2 further states that media rarely focus on positive dimensions of addressing climate change, and instead focus on negative stories. Such reporting influences participants' attitudes that because the impacts are global, individual actions are meaningless unless others contribute, and this reinforces perceptions that climate change cannot be addressed (Hargreaves *et al.*, 2003). This finding presents key challenges for sustainable living and addressing climate change, as the positive messages and encouragement participants feel they need are not present within mass media.

The findings here suggest that while negative, alarming and fearful representations of climate change within the media attract attention, such reporting techniques are generally an ineffective tool for motivating genuine personal engagement (O'Neill and Nicholson-Cole, 2009). Mass media arguably has a great influence on people's perception of (addressing) climate change (Carvalho and Burgess, 2005), however utilising fear desensitises individuals to be concerned about the issue (O'Neill and Nicholson-Cole, 2009). Consequently, this finding reveals that for participants, media representations of (addressing) climate change have the wrong balance between a sense of alarm and a sense of alarmism (Boykoff, 2008; Risbey, 2008; Gavin, 2009).

BP4 comments that there is publicity relating to encouraging addressing climate change, but concedes that there should be more. Additionally, BP4 comments that the media would be an ideal medium for emphasising the benefits of action. Mass media campaigns to encourage individuals to reduce their energy use have been used previously. Whilst participants consider this may have some benefits, Abrahamse *et al.* (2005) reports that such campaigns result in slight increases in knowledge and willingness to behave pro-environmentally increases only among those who already take action.

6.3.3.3. Collective action and community responses

The role of community groups was considered to play an important role in the context of sustainable living:

> "This is where community groups come in because if there's more people doing it, you know what to do and how to do it then you're more likely to pick up more things and get involved in more things that could help" (BP4),
>
> "It's an important issue to me because I think that there's so much more that we could do if we collectively found the time and the resources to do it. We won't be waking up to these things… but I think it needs to happen" (NP2).

BP4 and NP2 comment that they believed collective action within their local community would help enable, and encourage, sustainable living, and reference the

ways in which individuals can engage (cognitively, affectively and behaviourally) with CBCRS (Chapter 7). Participants highlight that collective action is important to encourage pro-environmental actions and sustainable living overall (Section 6.3.4.9). Specifically, BP4 states that they believe locating sustainable and pro-environmental practices within communities whereby more people are involved and individuals are aware of what they can do and how to undertake behavioural responses are necessary for sustainable living at the community level.

6.3.4. Enablers of, and barriers to, sustainable living

Participants focused their attention on numerous issues that acted as enablers and barriers to living sustainably (Box 6.6). Focus group participants paid special attention to the enablers and barriers to sustainable living, and articulated their emotions in multiple ways: passion, anger, irritation, and questioning.

Box 6.6: Identified enablers of, and barriers to, sustainable living

Participants indicated that there were numerous enablers and barriers to sustainable living within their communities. In particular, they highlighted that some factors served as both an enabler to living sustainably and a barrier. Moreover, participants noted that if these issues were to be addressed (by national or local government), sustainable living would be more achievable:

- Incentives and disincentives
- Awareness raising
- Making measures easier to do
- (In)convenience/habits
- Insulation schemes
- Time constraints/commitments
- (Over)packaging
- Collective action
- Global action
- Feedback
- "Double whammy effect"
- School projects
- Financial measures
- Cost of sustainable alternatives
- Infrastructure/inefficient transport
- Desirability of homes and gardens
- "Disposable Society"
- Community projects

Participants indicated that there were some factors that were more important to address than others, and that some factors that were 'higher order' issues which would influence other enablers and barriers. Consequently, these enablers and barriers are discussed in more depth in Sections 6.3.4.1 to 6.3.4.9.

6.3.4.1. Incentives and disincentives

Participants highlighted that a range of incentives and disincentives would be appropriate to enable and positively influence sustainable actions, and also act as a barrier to behavioural responses to unsustainable actions:

> "I don't think there's an incentive [to act]" (CP1),
>
> "Just left alone to it aren't you!" (CP3),
>
> "If there was an incentive, then perhaps… some people would be more proactive in doing things" (CP1),
>
> "They do it at school. You do "Bike to School Week" or "Walk to School Week", say it runs for two weeks, they get something at the end of it so they do it… to get them aware and reward them" (CP4),
>
> "Reduced energy bills from energy companies and make them more responsible for the way that they use power" (NP6),
>
> "Disincentives to behave badly would also help" (NP5),
>
> "Fines [for] if your bins are only collected, say… once every two weeks" (NP6).

Primarily, participants identify that there are no incentives to take action. Participants further state that if there were incentives to act, individuals would be more proactive in taking action. Examples of school projects were used to highlight that educational schemes are viewed as important, making people aware of the main issues and offering rewards to those who participate. Participants indicate that projects offering an incentive i.e. reduced fuel bills, should exist to enable sustainable living. This point is contradicted in Section 6.3.4.7; identifying that by taking action, they reduce their energy bills and there is the potential for "feel good factors" (personal satisfaction).

Although not directly mentioned, participants may be discussing the possibility for financial incentives. Previous research has found that financial incentives to change behaviour have questionable impacts. Monetary rewards may serve as an extrinsic motivator to conserve energy; they can be contingent on the amount of energy saved or a fixed amount (Abrahamse *et al.*, 2005). Behaviour changes undertaken in

response to monetary rewards are often short-term and rarely survive once the interventions are discontinued (Abrahamse *et al.*, 2005).

Further to incentives enabling sustainable living, participants also suggested disincentives to act as a barrier to unsustainable practices. It is intriguing that participants suggested disincentives to undertake behavioural responses, and reinforces suggestions in Sections 5.5.4 and 6.3.3 relating to forcing people to undertake pro-environmental actions; essentially removing individual freedom to act. What is particularly intriguing about this finding is the level of acceptability and support this measure gains from participants. Previous research indicates that despite initial public resistance to measures forcing people to be green, such initiatives are met with improved public support after its introduction (Downing and Ballantyne, 2007; Ockwell *et al.*, 2009).

6.3.4.2. Financial measures and costs

Costs were frequently mentioned as a substantial barrier to personal action addressing climate change and living sustainably, as sustainable alternative products are often more expensive:

> "People just look at things and then think "it's too costly" to buy the more efficient items" (BP1),
>
> "It's like solar panels. People might want them and think that they're quite a good idea but they cost a lot and think… I'm not going to bother" (BP2),
>
> "It's things like the bus route around here… it's really costly. It's ridiculous" (CP4),
>
> "What get's me is that in London, all children travel free. All pensioners are free. So if they can do it, then why can't we? Because surely then, it would encourage more people to go on a bus" (CP1),
>
> "It's got to be financial. You've got to make things that are inefficient more expensive and make things that are sustainable cheaper. That comes with technology. The problem with new technology is that it comes with cost. Eventually, it does become cheaper" (CP5).

Participants specifically commented that the cost of public transport and products that help enable sustainable living are more expensive than unsustainable products, and therefore this results in individuals purchasing items that are not energy efficient. Renewable energy technologies were considered too expensive for individuals to consider installing them. This presents particular challenges for sustainable living as alternative sources of energy production and consumption away from fossil fuels reduces the main causes of climate change. Consequently, the cost of sustainable alternatives does not allow for their widespread uptake as individuals consider the financial costs of acting sustainably to be high.

The language used by participant's highlights that individuals felt strongly towards these issues. Statements including "I'm not going to bother", "it's ridiculous" and questioning why other areas are unable to have free public transport demonstrates that costs of measures are a point of contention for participants. Some participants became quite irate when discussing the costs of sustainable alternatives arguing that the issue "went against basic common sense" (CP2).

CP5 stated that they considered financial measures accompanying changes in technology would act as a major enabler for sustainable living. Whilst CP5 acknowledges that new technologies are more expensive, sustainable items should be made cheaper whereas inefficient products more expensive. These comments mirror what Jackson (2011) argues in favour for: an ecological tax reform resulting in a shift in the burden of taxation from economic goods to ecological bads, encouraging more people to purchase sustainable alternatives instead of energy intensive products.

6.3.4.3. Awareness raising

Participants indicated that raising awareness of sustainable alternatives was required to increase public understanding of how to become more engaged with sustainable living:

> "Probably more better awareness and public knowledge about things. You can get special adaptors… with sensors on it so when you turn your telly off. It turns everything off. It's one of those things people don't really know that they're around" (BP3),
>
> "You don't really sit and think, "what can I do to help the environment?" and try to find something. If the information was given to you then you may think that's a good idea to do that" (BP4),
>
> "If there was something on the news or someone saying "you can do this" then you probably think that "I can do this" but it's not something you'd sit in your spare time and necessarily look at" (BP2).

Participants considered improved knowledge about sustainable living would act as an enabler, and that information should be provided to individuals to support their behavioural responses. Specifically, participants suggested that if information were provided related to certain technologies or how to undertake particular responses, there would be an increased level of involvement. Information is widely used to encourage energy conservation, and different kinds of information can be provided, including behavioural options for reducing energy use (Abrahamse *et al.*, 2007). Despite being an effective tool for influencing behavioural antecedents such as changes in knowledge, the provision of information does not necessarily lead to behavioural changes, or energy savings (Barr and Gilg, 2005; Abrahamse *et al.*, 2007). Tailored information can prove a more effective method of changing behaviour as this meets the needs of the individual (Abrahamse *et al.*, 2005; Abrahamse *et al.*, 2007).

BP2 and BP4 discuss that researching sustainable responses is not something that individuals would sit in their "spare time and necessarily look at", and requires time to explore and become involved with. These comments indicate that participants view exploring the options for sustainable living as time consuming, even before deciding upon, and undertaking, particular responses. These comments relate to statements made in Section 6.3.4.5 that in a "time-pressured society", participants

perceive that some actions are difficult to incorporate sustainability into everyday lives.

6.3.4.4. Feedback

Multiple participants highlighted that receiving feedback on behavioural responses would be advantageous and highlighted its importance, particularly for continuing to take behavioural responses:

> "Sometimes it's being told what you are doing is good and motivates you to continue… because you may be doing something that is good… and then stop doing it because you don't realise the significance. If you feel good that you're doing something positive, you may be inclined to do a bit more" (BP3),
>
> "No ones telling you that you're doing a good job to save the environment. It (feedback) would help wouldn't it? Like am I doing a good job" (NP7).

Participants are uncertain about the efficacy of their behavioural responses to address climate change, and consider receiving feedback would support their actions. Participants further state what they find would be useful feedback, particularly relating to the positive outcomes of actions and their significance. BP3 and NP7 comment that they feel that feedback would offer encouragement and motivation for continuing behavioural responses. BP3 comments that receiving feedback would not only help participants understand the impacts their actions have along with their significance, but would also provide individuals with a "feel good factor" (Section 6.3.4.7) which turns actions into repeated behaviours (Verplanken, 2011). BP3 acknowledges the importance of interventions comprising tailored feedback, and its impacts in maintaining pro-environmental habitual behaviours.

Previous research indicates that those individuals exposed to interventions that aim to change behaviours do reduce their energy consumption and gain increased knowledge relating to energy conservation, as opposed to those individuals that are not exposed to feedback and use more energy (Abrahamse *et al.*, 2007).

Consequently, various forms of feedback could be utilised to support participants' motivations to undertake behavioural responses (Abrahamse *et al.*, 2005).

6.3.4.5. (In)convenience, habits and "time-pressured society"

Participants made reference to the (in)convenience of undertaking behavioural responses as part of a sustainable lifestyle, and habitual behaviours, discussing these factors as enablers and barriers:

> "I don't think recycling is inconvenient. We've got all our different bins set out so it's really easy to just separate them. That's habit like you say" (BP4),
>
> "Where my mum and dad live, it's a lot harder. They have a bag for paper and a like a box for other things. They do recycle but not as many people on the street actually do it because… it's more effort. You have to go out of your way for it, then… people will give up and think "I'm not going to waste my time". We do it a lot quicker and it's not a hassle to do it, and it becomes part of life" (BP2),
>
> "We could do so much more, but equally, we live in quite a time-pressured society where we want to be doing and packing so many things into our days. The pressure is on for you to keep a home, a job, and all of these things around sustainable lifestyles, it raises questions about [whether] you can pack it all in to 24 hours. The answer is probably… no… so we'll go for convenience" (NP2),
>
> "You used to have your little towns where you used to have your baker [and] your butcher all in a row. It's almost like losing the high street in these villages and you've got to drive x amount of miles to get it all under one roof" (NP3),
>
> "You've got to drive to it. It's not walkable now and lots of these supermarkets are very much out on the periphery" (NP2).

Participants highlighted that some behavioural responses, particularly recycling can be considered (in)convenient, depending upon the local service (specifically, separation of items). The separation of items was considered to be more effort, resulting in a barrier to recycling. BP2 argues that individuals sometimes have to go "out of their way" to take action, and that this inconvenience results in reverting to

throwing rubbish in to landfill. However, BP2 also argues that their actions to recycle are quicker and there is no hassle, describing this as a "part of life". These statements suggest that different recycling schemes can influence the ways in which individuals perceive pro-environmental actions (Werner and Makela, 1998; Perrin and Barton, 2001). If such inconvenience can be transcended and the actions that individuals undertake are viewed positively, they are much more likely to be repeated and become habitual behaviours (Verplanken *et al.*, 1998; Verplanken and Aarts, 1999; Jackson, 2005; Verplanken, 2011).

As individuals live in a "time-pressured society" incorporating sustainable practices within current lifestyles is difficult, and consequently individuals choose products and actions based on convenience, which may not be the most environmentally sensitive decisions and practices. Participants believe that because of the loss of local convenience stores and distances to travel to purchase items for everyday consumption, participants considered this to be a loss to local communities that increased carbon emissions through travelling to out-of town shopping areas.

These factors lead to major challenges for individuals to act sustainably as changes to the ways in which individuals purchase and consume products requires travelling to out-of-town shopping centres, resulting in local communities and consumption patterns being locked-in to unsustainable trajectories (Jackson, 2005; Seyfang and Smith, 2007; Mulugeeta *et al.*, 2011). The development and changes to consumption patterns over time, identified here, has led to unsustainable habitual behaviours that often undermine intentions for pro-environmental behavioural change, and consequently "lock in" unsustainable actions (Jackson, 2005; Heimlich and Ardoin, 2008; Roy and Pal, 2009; Verplanken, 2011).

6.3.4.6. "Disposable Society"

Many participants noted that they identified individuals within society to be mere consumerists, with desires for latest technologies, leading to a culture of disposing of items that can still be used:

> "We paid £1,075 for a 32" television set. It's in our back bedroom now and it's fantastic. I want to get rid of it… I would willingly give it to someone who couldn't afford a TV. To find someone? Oh no. They don't want one like that. They want a flat screen, LCD, LED thing" (CP2),
>
> "It probably weighs half a tonne and they've got to collect it" (CP5),
>
> "It does weigh half a tonne, yes but someone prefers to pay £500 for a television set whereas there's a TV that works perfectly and the only thing you can do with it is chuck it away. Now to me, that's absolutely disgusting because there are people in this world who haven't got a television set and there are people who can't afford one" (CP2),
>
> "But we're a disposable society, aren't we?" (CP1).

CP2 identifies changing consumption patterns for the latest technological developments. The language used by CP2 demonstrates strong feelings towards individuals who would not reuse a TV that works in favour of one with advanced specifications. CP2 became irate and stated they find it "disgusting" that no one will use the TV in favour for a modern application, and compares this to those who do not have access, or unable to afford, a TV. This comparison, along with the language used, highlights that participants feel negatively not only towards the concept of sustainable living, but hold negative attitudes towards those who they believe to not consider sustainable alternatives. This finding supports other outcomes in Sections 6.3.2 and 6.2.3 that when engaging with sustainable living, participants consider the behavioural responses of other individuals as a key dimension of their attitudes.

CP1 responds by stating, that collectively, the preferences and purchasing patterns of individuals for the latest technologies represent a "disposable society" where only the most up-to-date items are considered for purchase. It is perhaps a combination of advertising and branding of "all-singing and all-dancing" products that individuals, irrespective of concern towards the environment, aspire to purchase symbolic of a "developed lifestyle".

6.3.4.7. Selling the benefits, "feel good factors" and "double whammy" effects

Participants noted that behavioural responses addressing climate change and efforts to live sustainably often had multiple benefits:

> "If people can maybe say "you could be doing this to reduce your bills" but at the same time, you're doing this as well it's got a double whammy effect, people do it to save their money but also there's a feel good factor then maybe repeat it again. People aren't thinking of the two things together" (BP3),
>
> "So, do you think it's important to sell those benefits rather than how difficult it is? (I),
>
> "Definitely" (BP2),
>
> "People want to know why it's good to live differently. I'd want to know. I don't want to be told it's not achievable or it's difficult" (BP1),
>
> "If it can save you money as well, people are more likely to do it. Our house is insulated, so it's really energy efficient and we don't need to turn on the heating as much. If you're cold, put a jumper on" (BP4).

Participants suggested that there should be material promoting the benefits of taking action to live more sustainably, acknowledging that undertaking behavioural responses often had multiple benefits. BP3 acknowledged that reducing energy consumption and use around the home saved money on energy bills and had a "feel good factor", and notes that if the experience of taking action was favourable, the action would be repeated. This finding reinforces studies suggesting that if individuals have a positive experience in undertaking behavioural responses, the behaviour is more likely to be repeated (Ajzen, 1991; Verplanken and Aarts, 1999; Ajzen, 2005).

These findings further suggest that participants perceive that the majority of individuals do not align positive outcomes with pro-environmental actions, and believe that this should be addressed. Participants feel that it is important to "sell the benefits" of taking action rather than the difficulty that is often reported, allowing others to gain an insight into how to live sustainably and why it's important.

Here, participants assert what they think climate change communication should focus on (Whitmarsh and Lorenzoni, 2010) and why. BP1 substantiated their comments suggesting that they do not want to be told that sustainable living is unachievable or difficult, indicating a defeatist and pessimistic attitude towards addressing environmental and sustainability issues could be a "turn off", and result in barriers to engaging with sustainable living.

BP4 used the example of insulating their home; they didn't have to turn on their heating as often, and acknowledges that their home is more energy efficient. Furthermore, practical measures were preferred over turning on heating, including wearing a jumper. It is often reported that when participants take action to save carbon emissions in one area, behaviour changes can have secondary consequences, for example if an individual saves money on energy efficiency measures and spends those savings on energy-intensive applications (Ockwell *et al.*, 2009). Participants noted that some actions can lead to further, and positive, behavioural responses. This other "double whammy" effect could be defined as a positive rebound effect, where there are positive secondary consequences to taking individual action, collecting rather than negative effects.

6.3.4.8. Collective action and "powerlessness"

Collective action was frequently mentioned as an important dimension to sustainable living, particularly in the context that individual actions are limited in making a substantial impact to living sustainably:

> "It's not a personal thing. Everyone has to take part in doing something. It's got to be daily routine" (NP7),
>
> "I suppose its educating people and it's not just you, it's everyone else so you're part of a small cog in a big wheel. If everybody did it then you wouldn't have a problem" (NP6),
>
> "You just think that a one man mission isn't actually going to have any impact" (NP5),
>
> "It's not going to change anything" (NP8),

> "Whatever you do to persuade other people… if they don't want to do it then you can't make them, but it would have more of an impact" (NP6).

Participants felt that individuals have limited impact towards living sustainably and addressing climate change. These comments reinforce findings from Section 6.2.5 that individuals feel powerless to solve climate change. NP7 comments that sustainable living was not a "personal thing" and that others' involvement was required. NP6 and NP5 agreed using phrases to characterise their position, feeling that they were a "small cog in a big wheel" and a "one man mission" had no impact whatsoever.

While these findings illustrate that participants are aware of the social dimensions of behaviour (Jackson, 2005; Darnton, 2008), and reinforce assertions from other studies where individuals feel almost powerless to make meaningful changes to reduce their environmental impact, and solve climate change, through voluntary individual actions (Stoll-Kleeman *et al.*, 2001; Aitken *et al.*, 2011), because of the failure of others to carry out similar actions. The comments made here suggest that feelings of "powerlessness" (Aitken *et al.*, 2011) are linked to considerations of climate change as being of low importance. Further, participants note that attempts to "educate" and "persuade" others would have more of an impact and provide encouragement for participants to take action. Therefore, participants' identification of collective action and feelings of "powerlessness" can be overturned from a barrier to an enabler of sustainable living.

6.3.4.9. Community projects

Throughout the focus groups, participants made frequent references to the attitudes held by others towards sustainable living (Sections 6.3.2 and 6.3.3), and how collective action could be an enabler of behavioural responses for sustainable living. Interestingly, the theme of enabling collective action within local communities was discussed in detail:

"They could open pop up shops where people could go in and they could give out leaflets on different community schemes that are going on, [and] different ways they may be able to save money and people could go through their finances and make a list of… where you could save money" (BP1),

"That's a real incentive" (BP4),

"I think that's a really good idea that would help a lot of people if you showed people how they could cut down each month on things, a lot of people would probably think, "actually I might do that" (BP2),

"I just think that obviously people are struggling at the minute with their bills and things, and something like that people would appreciate that" (BP4),

"It [might] not necessarily [be] incentives it could be like hints and tips on how to do things around the home" (BP2),

"I think that the idea of a pop up shop or a base that people could go to if they had issues or questions would be… a beneficial thing for a community" (BP2),

"Maybe if there were community initiatives around growing food and recycling of clothes and food banks. Things where we can help each other [out] just locally" (NP2).

The most noticeable element of the conversational output about community projects relates to the level of creativity of participants. Participants identify solutions to help support, and enable, behavioural responses that would lead to sustainable actions. Participants suggest that "pop up shops" providing guidance on actions to be taken and financial advice on where to save money by undertaking behavioural responses. This suggests that the notion of a "pop up shop" is almost like a one-stop shop for community projects encompassing multiple interventions and services that support residents.

Consequently, participants indirectly suggest that the enablers previously mentioned in Sections 6.3.4.1; 6.3.4.3; and 6.3.4.4 (awareness raising and feedback) could be integrated within identifiable community initiatives. This approach of incorporating multiple methods engaging local residents with sustainable lifestyles were considered positively because it could touch upon various everyday considerations

and practices including saving money on energy bills; hints and tips for energy conservation; growing food; and recycling clothes. The language used by participants is revealing. NP2 considers that the main aim of a community project should be an arena where people "help each other", identifying the community-led dimensions and that residents in the local area benefit. Comparisons can be made with existing CBCRS as participants identify that community projects should encompass a range of interventions that aim to benefit local residents (Alexander *et al.*, 2007; Hope and Alexander, 2008; Heiskanen *et al.*, 2010; Middlemiss and Parrish, 2010).

Participants further state that this approach to enabling sustainable lifestyles would be a "real incentive", suggesting that this proactive method would facilitate engagement with residents within the local community to live sustainably. Participants expanded upon these points and suggested that "pop up shops" in particular could support residents who had questions in order for feedback to be offered, and that in times of economic hardship residents would appreciate and use such a service. Participants state that offering feedback and advice on behavioural responses would support, and enable, sustainable lifestyles and ascribe particular importance to such interventions (Abrahamse *et al.*, 2005; Abrahamse *et al.*, 2007). Participants make reference to the acceptability of community initiatives and consider that they would be well received within their local communities.

The themes explored in this section relating to community projects and public engagement from local residents are explored in more detail in Chapter 7.

6.4. CHAPTER SUMMARY

This chapter has explored behavioural responses to addressing climate change, and perspectives towards sustainable living at the community level. Survey respondents and focus group participants indicated their willingness to take measures to reduce their carbon emissions, and what behavioural responses they would undertake. Additionally, participants discussed their perspectives towards sustainable living, comprising their understandings of the term "sustainable living"; evaluating whether

they believe a sustainable lifestyle; and their consideration of the factors that enable, and act as a barrier to, sustainable living (within their communities).

Box 6.7 summaries the main findings pertaining to willingness to take behavioural responses to addressing climate change.

Box 6.7: Behavioural responses to addressing climate change: A summary of main findings

Willingness to take behavioural responses

Overall, the majority of respondents (70.6%) stated that they would be prepared to take behavioural responses to address climate change. Chi-squared analysis demonstrates that those who engage with (hear about and discuss) climate change related information; believe protecting the environment to be important; hold an "engaged" or "concerned" attitude; not sceptical about elements of climate change; those aged between 36-55; and educated at college level or above were more likely to be willing to take measures to address climate change. These results are largely consistent with previous studies, indicating that those who hold pro-environmental attitudes; hold higher levels of formal qualifications; personally concerned about climate change are more likely to take action (Poortinga *et al.*, 2002; Anker-Nilssen, 2003; Hargreaves *et al.*, 2003; Eurobarometer, 2009; Upham *et al.*, 2009; Whitmarsh, 2009b). Despite this, these results are based on self-reporting of willingness to take action (POST, 2010), and it is unknown whether respondents will follow through with their declarations that they will take action, or even what will activate their behavioural responses (Verplanken, 2011).

Those that stated that they would not take measures commented that they would not primarily because action to address climate change was considered difficult and time consuming. These statements are frequently mentioned when individuals provide reasons as to why they will not take measures.

Identified behavioural responses

Respondents identified a multitude of behavioural responses that they were willing to undertake, principally recycling and domestic energy conservation. These responses are consistent with previous studies, indicating that few people are prepared to take measures beyond recycling and domestic energy conservation (O'Neill and Hulme, 2009; Whitmarsh, 2009b). Yet more substantial forms of behaviour change were less commonly cited, indicating that respondents considered actions which they considered to be comfortable to integrate into their daily lives (Whitmarsh, 2009b). Focus group participants also demonstrated that they would be willing to take a range of environmental actions to address climate change, such as growing their own vegetables, recycling, driving less and exploring what else they could do. Additionally, one participant suggested they would not buy from environmentally damaging companies, suggesting that some individuals are prepared to take public sphere actions consistent with notions of low-carbon living

(Verlanken, 2011; Whitmarsh and O'Neill, 2011). The willingness to take action by participants is noted as being complimentary to those actions currently being taken, which already demonstrate a range of low and high impact actions, such as recycling, not owning a car, purchasing eco-friendly appliances, not eating meat, insulation and double glazed windows. This suggests that whilst willingness to take action may be low impact, this does not take into consideration action that has already been taken.

Future behavioural responses

Some participants identified that they would be willing to, and have already considered, taking actions in the future to address climate change. This shows substantial levels of engagement with addressing climate change. This is a original and important finding, demonstrating: (1) sensitivity to potential changes in (future) circumstances; (2) consideration of other actions that could be taken; (3) preparation to set aside financial resources for higher impact measures (i.e solar panels); (4) the necessity of sustained action to address climate change; and (5) the integration of pro-environmental actions as part of a sustainable lifestyle. These findings illustrate that amongst some participants there is a deep level of cognitive, affective and behavioural engagement with addressing climate change. Yet, this finding also indicates implications for engaging those participants who did not consider these aspects to their actions towards addressing climate change to consider greater engagement with (future) behavioural responses and their associated environmental impacts.

Rebound effects

Without knowingly identifying rebound effects, some participants identified that while they attempted to take measures to reduce their carbon emissions, they took more actions that were unsustainable, thus increasing their carbon footprint. Participants understood what actions saved carbon emissions and what actions contributed to carbon footprints, and transpires that the efforts by some participants to take action is offset by other individuals, thus making their actions negligible in comparison to actions that substantially emit emissions (i.e. use of 4 cars). Such actions related to comfort, suggesting that these actions are far removed from considerations of environmental impact. Similar to what Blake (1999) and Kollmuss and Agyeman (2002) describe as the "value-action gap", this finding indicates an "action-impact gap" where there is no immediate link between the actions of individuals and consideration of environmental impacts. However, attempts are made to "talk-up" the positive actions that are taken to offset, and reduce, their negative impacts, resulting in overcompensation; thus highlighting positive actions results in articulating strong affective engagements with other people's negative actions. These findings support the assertions by Barr (2004), indicating that individuals have learnt the language and semantics of environmentalism, and are capable in responding in what has become a socially accepted manner.

Categorising behavioural responses

Actions were categorised, illustrating the intensity of carbon reduction actions (i.e. the level of impact those actions have with respect to reducing carbon emissions) and the frequency to which those actions are undertaken provides four distinct

classifications (excluding those who take no action). The first classification identifies actions that are low impact actions that are undertaken on a low level frequency (occasionally, monthly or single time basis). The second category identifies actions that are, again, low impact actions but undertaken more frequently (on a daily or weekly basis). The third classification identifies actions that are considered high impact actions that are done on an occasional, monthly or single time basis. The final, and fourth, category identifies actions that are high impact actions that reduce more carbon emissions than low impact actions, undertaken on a frequent (daily or weekly) basis.

These four classifications illustrate that there is a relationship between the intensity (level of impact) of particular actions and the frequency to which they are undertaken, and are illustrated diagrammatically in Figure 6.2. This framework indicates that respondents take low impact actions frequently, consistent with previous findings (Whitmarsh, 2009b; Peters *et al.*, 2010). Chi-squared analysis indicates that those who believe protecting the environment; personally concerned about climate change; regular engagement with climate change related information; educated to degree level or above; and employed full time are more likely to take higher impact actions frequently. These findings are consistent with previous findings, suggesting pro-environmental values, higher levels of formal education and concern for climate change influences choice of behavioural responses (Anker-Nilssen, 2003; Poortinga *et al.*, 2004; Lorenzoni and Langford, 2005; DEFRA, 2007; Eurobarometer, 2009; Upham *et al.*, 2009).

Understandings of "sustainable lifestyles"; considerations of sustainable living; and identifying the enablers and barriers that face participants were sought to explore perspectives towards sustainable living. The main findings relating to perspectives towards sustainable living are highlighted in Box 6.8.

Box 6.8: Perspectives towards sustainable living: A summary of main findings

Understanding of "sustainable lifestyles"

Understandings of "sustainable lifestyle" tended to focus upon notions of human interactions with the physical environment, living within environmental limits, so not to negatively affect the natural world. The term was more readily associated with action to address climate change, more so than the term "environmentally friendly". This suggests that a level of proactivity with responses to actions are integral for understandings of "sustainable lifestyles". These measures vary in terms of (1) type of responses; (2) scale; and (3) level of impacts. Specifically, there were considerations of technical and behavioural responses (Abrahamse *et al.*, 2005; Reeves, 2009); whether actions would be undertaken at an individual/household level (i.e. recycling) or at the national level (i.e. reducing the use of fossil fuels); and that the higher the impact that actions have, the closer people are to living sustainably. Additionally, participants understood that sustainable lifestyles have to

be an achievable concept, and that other people have an apathetic attitude towards sustainable living and addressing climate change. Participants argue that this presents a challenge to sustainable living as they consider the majority of people to not be personally concerned about such issues.

Considerations of sustainable living

Participants considered whether they lived a sustainable lifestyle. Of those who stated they partially did live sustainably or did not live a sustainable lifestyle indicated this because they did not take sufficient actions to be considered sustainable. Whereas some participants indicated that external forces prevented individuals from fully living sustainably. However, others considered themselves to not be effective at living sustainably or were apathetic to whether they truly lived sustainably, indicating that taking the actions they do take to be sufficient.

The relative importance of sustainable living and addressing climate change

Within the context of other issues, participants indicated that they felt that sustainable living was an important issues, in some cases more so than addressing climate change. Participants substantiated their statements with reference to future generations, other people's (non)participation and forcing green behaviours. These comments reflected that participants are aware that sustainable living can contribute as a solution to climate change (Roy and Pal, 2009; Upham *et al.*, 2009). Other people's participation in taking action was considered integral for sustainable living as participants indicated that the matter was a collective issue and moved beyond being a personal matter (Uzzell, 2010). Yet, one participant argued that individuals should be forced to undertake pro-environmental actions (Ockwell *et al.*, 2009), relating this to concepts of utilitarianism, and addressing climate change and sustainable living as a human right (Hayward, 2007; Caney, 2010; Okereke, 2010).

Participants also identified that media outlets reported mixed messages that confused individuals, instilled fear, scepticism while not providing much encouragement for addressing climate change (Gavin, 2009; O'Neill and Nicholson-Cole, 2009; Whitmarsh, 2011). Such reportings were noted as having substantial impacts on public perceptions of (addressing) climate change (Carvalho and Burgess, 2005; Gavin, 2009), which may desensitise individuals about their concern towards the issue (O'Neill and Nicholson-Cole, 2009).

Moreover, community groups and collective action were considered to be an important dimension of sustainable living, as this encouraged a community approach, resulting in advantages for local residents (Alexander *et al.*, 2007; Middlemiss and Parrish, 2010) and that community groups can support individual behavioural responses. Participants identified community action in a positive manner, indicating their acceptability towards such projects aiming to facilitate, increase and maintain sustainable, low-carbon living.

Participants paid special attention to the enablers and barriers of sustainable living, suggesting that a multitude of factors can act as enablers and barriers to

encouraging action and facilitating low-carbon lifestyles. Box 6.9 summarises the main findings.

Box 6.9: A summary of the enablers and barriers to sustainable living

Enablers and barriers to sustainable living

Participants identified a range of factors that act as both enablers and barriers to sustainable, low-carbon living, such as: awareness raising; financial measures and costs; tailored feedback; (in)convenience, habits and "time pressured society"; selling the benefits, "feel good factors" and "double whammy" effects; collective action and feelings of "powerlessness"; and community projects.

Overall, participants considered that factors such as awareness raising and feedback had primarily positive impacts to facilitate sustainable living. Information is widely used to encourage energy conservation, yet the provision of such information does not necessarily lead to behavioural responses or energy savings (Barr and Gilg, 2005; Abrahamse *et al.*, 2007). Yet, tailored information and feedback can prove a more effective method as it meets the need of the individual (Abrahamse *et al.*, 2005). This method would be advantageous, particularly as participants are uncertain about the efficacy of their behavioural responses to address climate change, and would find feedback useful. Tailored information, such as energy savings could also influence other factors such as "feel good factors", which may turn sustainable actions into habitual behaviours (Verplanken, 2011). These methods may be effective, as previous research identifies that those exposed to such interventions do reduce their energy use (Abrahamse *et al.*, 2007).

Financial measures and costs were contemplated to be an enabler and barrier, particularly as sustainable alternatives were considered too expensive to afford. Yet, participants identified that financial measures and regulations could alter this situation by making sustainable products cheaper and unsustainable actions more expensive. These comments mirror what Jackson (2011) argues in favour for: an ecological tax reform resulting in a shift in the burden of taxation from economic goods to ecological bads, encouraging more people to purchase sustainable alternatives instead of energy intensive products.

Participants felt that (in)convenience, habits and time were also enablers and barriers to sustainable living, particularly in the context of specific behavioural responses. Some participants suggested that particular recycling schemes were inconvenient because of the separation of items into individual bins, yet others identified this as "part of life" and habitual behaviour (Werner and Makela, 1998; Perrin and Barton, 2001). This suggests that if such inconvenience can be transcended and the actions that individuals undertake are viewed positively, they are much more likely to be repeated and become habitual behaviours (Verplanken *et al.*, 1998; Verplanken and Aarts, 1999; Jackson, 2005; Verplanken, 2011).

Participants identified that identifying "feel good factors" and selling the benefits of living sustainably would act as an enabler of low-carbon living. Participants indicated that individuals wanted to know the positive outcomes of alterative living, rather

than the difficulty that is often presented substantiated this. Here, participants assert what they think climate change communication should focus on (Whitmarsh and Lorenzoni, 2010). “Feel good factors” related to the personal satisfaction of taking action, noting that if the experience of taking action was favourable, the action would be repeated. This finding reinforces studies suggesting that if individuals have a positive experience in undertaking behavioural responses, the behaviour is more likely to be repeated (Ajzen, 1991; Verplanken and Aarts, 1999; Ajzen, 2005).

Community projects were considered to be an essential enabler to sustainable living at the community level, identifying that such projects could also incorporate other enablers of action (i.e. awareness raising, feedback and selling the positives). Therefore, community projects were considered to be solutions to help support, and enable, behavioural responses that would lead to sustainable actions. Participants considered these projects to “help each other”, and readily identified the community-led dimensions of community projects (Alexander *et al.*, 2007; Hope and Alexander, 2008; Heiskanen *et al.*, 2010; Middlemiss and Parrish, 2010). In addition, identifying that community projects result in multiple benefits for local residents, environmentally, economically and socially can also be seen as a level of acceptability of such projects.

Chapter 7 explores the nature of individual engagements with CBCRS. As such, it explores what people know about; feel towards; and (potentially) do in; a community project that aims to facilitate low-carbon, sustainable lifestyles. Consequently, Chapter 7 makes reference to the acceptability of, and participation in, CBCRS.

CHAPTER 7: ENGAGING WITH ADDRESSING CLIMATE CHANGE AT THE COMMUNITY LEVEL: ACCEPTABILITY OF, AND PARTICIPATION IN, COMMUNITY-BASED CARBON REDUCTION STRATEGIES

7.1. INTRODUCTION

This chapter follows on from the previous results chapters focusing on the analysis and presentation of results. This chapter analyses, and presents, results from the first and second stage of data collection, exploring the ways in which people accept, engage with, and participate in, CBCRS. Consequently, it addresses the third and fourth research questions set out in section 1.6.

Box 7.1: Overview of chapter

This chapter examines the nature of individual engagements with CBCRS in depth, relating to the dimensions of engagement (outlined in Section 2.6.1): cognitive (Section 7.2); behavioural (Section 7.3); and affective (Section 7.4) (Lorenzoni *et al.*, 2007; Whitmarsh *et al.*, 2013).

This chapter addresses the multifaceted nature of engagements with CBCRS and in so doing, makes reference to the level of understanding and public acceptability of, and participation in, CBCRS. Lorenzoni *et al.* (2007) and Whitmarsh and O'Neill (2011) have commented about the difficulty of engaging the public with climate change. Consequently, this chapter contributes to our understanding providing explanations for why people do, and do not, engage with addressing climate change at the community level through CBCRS. It is noted here that participation in CBCRS may not necessarily relate to behavioural engagements, but also cognitive and affective responses.

Finally, Section 7.5 concludes by summarising and describing the main findings of this chapter. Additionally, Section 7.5 makes reference to survey respondents and focus group participants' statements and evaluates the acceptability of, and participation in, CBCRS.

7.2. COGNITIVE ENGAGEMENTS WITH COMMUNITY-BASED CARBON REDUCTION STRATEGIES

Cognitive engagement reflects the extent to which respondents and participants expend mental effort (Mitchell and Carbone, 2011; Wolf and Moser, 2011) towards CBCRS. Consequently, cognitive engagements with CBCRS reflect levels of

awareness, knowledge and understanding of such projects (Lorenzoni *et al.*, 2007; Whitmarsh and O'Neill, 2011; Wolf and Moser, 2011).

7.2.1. Awareness of community-based carbon reduction strategies

It is widely reported that CBCRS result in numerous environmental, social and economic advantages (Alexander *et al.*, 2007; Middlemiss and Parrish, 2010; Mulugeeta *et al.*, 2010). These initiatives aim to meaningfully engage the public with addressing climate change and facilitate, increase and maintain low-carbon, sustainable lifestyles.

After being given a definition (read by the researcher), survey respondents and focus group participants were asked whether they were aware of any local CBCRS. Focus group participants provided a range of responses, indicating that their awareness of CBCRS comprised of various components and schemes:

> "I'm not aware of any. If there were one I think I would be happy to get involved. But no, I don't know of any in my area" (BP4),
>
> "Allotments, growing veg, walking to the allotment" (CP1),
>
> "Bus passes" (CP4),
>
> "[I'm] aware of recycling because you can take your shoes, clothes, plastics etcetera and food banks" (CP5),
>
> "Where the school go and collect the young children… it's a walking bus. [It] stop the parents jumping in the cars for convenience. The kids walk so it's healthier for them and it's equally good on the environment" (NP2),
>
> "What like electricity and stuff?" (NP7),
>
> "Community projects like heating the home through wall [and] loft insulation, UPVC windows. The council give you grants… you get it free" (NP6),
>
> "I'm not aware of any. I wasn't until you've just said" (NP5),
>
> "Recycling… although that's run by the council. It's still a community thing" (NP6),
>
> "I'm not aware of anything" (NP7),

> "Oh, I've just thought of one. At Keele, they encourage people to cycle there… I don't know what it's called but I suppose that would fall into a community carbon reduction project" (NP5),
>
> "There's also places at work they encourage people to car share" (NP6),
>
> "They have that at my Dad's school. There's probably quite a few of them, but I've not heard of any before" (NP5).

These comments demonstrate that awareness of CBCRS amongst participant's range, from those who are not aware of any initiatives to those who identify components of a community project. Participants did not identify a specific CBCRS within their area, but instead, identified particular components that may comprise of a CBCRS (i.e. recycling scheme; community allotments; and grants to install insulation).

Over half of participants stated that they were not aware of a CBCRS. This number is surprising; particularly as those participants who commented that they were not aware of a CBCRS lived in Blacon and Congleton (and have projects in their area: Sustainable Blacon and Congleton Sustainability Group). This result could indicate one of two issues. Firstly, CBCRS in Blacon and Congleton are not making residents aware of their schemes and activities. Conversely, and secondly, such schemes may be "invisible" to residents as they are not congruent with the activities they wish to participate and consequently 'throwaway' dissonant information and activities associate with CBCRS. This point is important, as participants noted in Section 6.3.4.9 that they believed that a community project would support their voluntary actions to address climate change. Without making continuous and considerable effort to make residents aware that a formal project is established in the local area, which individuals can engage with, sustained participation in CBCRS cannot be achieved.

This finding suggests that if awareness raising was undertaken at the implementation stages of developing CBCRS this has been insufficient to make residents in Blacon and Congleton aware of the initiatives that are in place, and their activities. This is supported by BP4's comment suggesting that although they are not aware of any local projects, they would be happy to become involved. This demonstrates that a

diverse range of methods is required to engage a diverse and heterogeneous public with addressing climate change at the community level (O'Neill and Boykoff, 2011; Todhunter, 2011). Consequently, this presents a substantial challenge from the beginning to meaningful and sustainaed public engagement with CBCRS.

Other participants appeared to be confused and questioned whether such projects existed. After other participants discussed their awareness, did NP5 comment that they were not aware of any local projects. This finding demonstrates that some participants are not clear about the concept and format of CBCRS. This may be due to the diverse introduction, and nature, of such projects (Alexander *et al.*, 2007; Heiskanen *et al.*, 2010). The establishment of CBCRS has been unsystematic in the UK and these projects are often tailored to the needs of the individuals within communities (Rogers *et al.*, 2008; Peters *et al.*, 2010). Consequently, the diverse nature and focus of such projects may cause confusion amongst participants, as there is no standard format of CBCRS as each initiative is distinguishable from another.

Some participants stated that they were aware of some schemes but only after being prompted of their existence when others mentioned them. This demonstrates that although participants may be aware of some schemes, or components that comprise an initiative, participants do not naturally recall this information immediately, and therefore need to be prompted to remember that particular projects exist. This prompt therefore acts as an "awareness trigger", where participants recall their awareness about CBCRS. This finding suggests that community carbon reduction is an issue that is firmly situated in the "back of the mind" (Giddens, 2009) and is not an issue located at the forefront of everyday lives for participants. This may be because CBCRS are not a widespread, highly publicised nor a proven alternative to living sustainably that captures the interest of individuals. Seyfang and Smith (2007) suggest that dominant individualist and consumerist lifestyle aspirations run counter to community collectivism and therefore progression from a niche (of local community practice) to more general acceptance is rather optimistic.

This finding suggests an important consideration for CBCRS. A lack of awareness of CBCRS within communities or even components of initiatives may be a result of a lack of visibility. This is to say that although community-based sustainability projects exist, these initiatives are not visible and have no lasting impact on an individual's awareness, interest or lifestyle. This finding is substantiated by NP5's comment stating that there may be numerous projects, though they are not aware of any specific initiative. Therefore, projects aiming to engage residents with addressing climate change must first capture their audience. Without doing so, CBCRS may find it challenging to engage individuals meaningfully, in all aspects of engagement (Whitmarsh *et al.*, 2013).

Despite this, some participants were aware of schemes that may be considered to comprise a CBCRS (i.e. recycling plastics and clothing; walk to school initiatives; grants for insulation; and car sharing initiatives). The responses here demonstrate that participants identify particular components of a CBCRS. Alexander *et al.* (2007) note that the AHGCNP is a multi-agency response to addressing climate change, and participants identify that differing responses from different organisations (i.e. council, schools and individuals) comprise a CBCRS. However, participants unknowingly provide these responses, and do not make reference to multi-agency responses.

The comments by participants from Northwood suggest that they were more aware of initiatives and components of projects than those in Blacon and Congleton. This result is intriguing; Northwood participants recognised components of a scheme where one does not exist in that area. This suggests that participant's awareness of community-based initiatives may also stem beyond the existence, and efforts, of CBCRS to raise awareness of, and influence interest levels in, their scheme.

56 survey respondents (9%) stated that they were aware of a community-based sustainability project. Those most aware, and in contrast to focus group participants, resided in Blacon (*n*=40, 18.4%) followed by residents in Northwood (*n*=10, 4.9%) and Congleton (*n*=6, 3.1%). 91.1% (*n*=51) of those who were aware of a project

commented that an initiative took place in their own community. The remaining 5 respondents identified projects in other areas: Ashton Hayes (*n*=3); Chester (*n*=1); and Birmingham (*n*=1). Those in Blacon may be more aware of a CBCRS taking place in their area as Sustainable Blacon is a projected established in 2010 that has been promoted within the community, thus explaining this variance. Table 7.1 shows the statistical variations between awareness of CBCRS.

Table 7.1: Variation between respondents awareness of a CBCRS

Respondents' awareness of CBCRS	**Groups with significantly higher proportions of responses**	
	Percentage	**Characteristic**
Those aware of a CBCRS	57.2%	Hear about climate change information on a daily-weekly basis (x^2=20.609, df=4, p<0.000)
	69.6%	Gain climate change information from TV (x^2=4.349, df=1, p<0.037)
	28.6%	Discuss climate change information on a occasional basis (x^2=10.633, df=4, p<0.031)
	39.3%	Hold an "engaged" attitude towards (addressing) climate change (x^2=11.156, df=5, p<0.048)
	85.7%	Prepared to take action to reduce personal carbon emissions (x^2=6.778, df=1, p<0.009)
	33.9%	Prepared to take low impact actions frequently (Action Level 2) (x^2=14.501, df=4, p<0.006)
	60.7%	Female (x^2=3.898, df=1, p<0.048)
Those not aware of a CBCRS	35.2%	Hear about climate change information on a monthly basis (x^2=20.609, df=4, p<0.000)
	32.9%	Never discuss climate change information (x^2=10.633, df=4, p<0.031)
	69.1%	Prepared to take action to reduce their carbon emissions (x^2=6.778, df=1, p<0.009)
	33.7%	Prepared to take low impact actions frequently (Action Level 2) (x^2=14.501, df=4, p<0.006)
	53.1%	Male (x^2=3.898, df=1, p<0.048)
From this analysis, it is observable that those who hear about climate change related information on a daily-weekly basis and discuss the issue with others on a occasional basis are more likely to be aware of a CBCRS. Conversely, those who hear about climate change information on a monthly basis and never discuss related issues are more likely to not be aware of a CBCRS. This suggests that those who are engaged with climate change related information on a regular basis are more likely to be aware of a CBCRS. Similar with awareness of climate change causes and consequences, those engaged with hearing and discussing climate change related issues more frequently are more likely to be aware of a community		

project. Additionally, those who hold "engaged" attitudes towards addressing climate change and higher proportions of those willing to take behavioural responses were more likely to be aware of CBCRS.

Overall, 563 survey respondents (91%) of respondents (Blacon: *n*=177, 81.6%; Congleton: *n*=190, 96.9%; Northwood: *n*=196, 95.1%) stated that they were not aware of any CBCRS, or any other type of sustainability initiative. The findings correspond to focus group participants' levels of awareness of CBCRS, where over half of participants were not aware of any formal project.

Few studies explore the perspectives towards CBCRS (Rogers *et al.*, 2008; Warren and McFadyen, 2010), yet previous research has not explored levels of awareness amongst residents, therefore situating findings in this study to previous research more challenging.

Box 7.2: Awareness of community-based carbon reduction strategies

Survey respondents who were aware of a CBCRS commented were asked to state what they knew about community projects. In Blacon, 23 respondents identified that there was a project related to the eco-homes (and associated technical measures) located on Stamford Road and Dyserth Road (Blacon), whilst 15 respondents identified that the scheme they were aware of a project related to an energy conservation scheme to save money on household energy bills. However, not all respondents identified a CBCRS. In Congleton, five respondents identified an online system that raises awareness of climate change and provides advice on how to reduce their carbon emissions, while one respondent commented the project was a recycling scheme. In Northwood, eight respondents noted that the community initiative they identified related to a recycling scheme (irrespective of it's location); one noted a scheme providing free cavity wall and loft insulation; and the remaining respondent identified an awareness-raising scheme of the effects of climate change.

Consequently, survey respondents and focus group participants in this study are generally unaware of CBCRS; their aims; functions; and activities to address climate change and facilitate low-carbon, sustainable lifestyles. This finding has clear implications for public engagement with, and participation in, CBCRS and mainstreaming sustainable development more generally. Lack of public awareness of CBCRS highlights the lack of impact alternative forms of living such projects have

made within the minds of the British public. Despite the reported "win-win" of CBCRS being exemplified, their unsystematic introduction; diverse aims and nature (Rogers *et al.*, 2008; O'Neill and Nicholson-Cole, 2009; Peters *et al.*, 2010); relative invisibility in the media and other communication channels have resulted in a divergence between what participants in this study suggest as an enabler of sustainable living, and what they would consider participating in and the visibility of such projects aiming to encourage engagement amongst local residents. Subsequently, without being aware of local projects residents are unable to meaningfully engage with, and participate in, CBCRS cognitively, affectively or behaviourally.

7.2.2. Understandings of community-based carbon reduction strategies

Alongside their awareness, participants also provided insights into their understanding of CBCRS. There was no uniform understanding of CBCRS. The following statements are indicative of participants' understandings:

> "It makes the environment look nicer and would create more of a feel good factor for your local community. If you start with small things… you can then build it up so when, say, now we are going to do a community allotment or a community-based project then people are more likely to engage with the community and more likely to bother with it" (BP3),
>
> "What about the ragbone man? How many of them have you seen? It's doing us a good service actually. We're not having all of this flytipping… where people just got rid of an old cooker or an old sofa" (NP2),
>
> "You're saving on your petrol not having to take it to wherever" (NP3),
>
> "I only had to put my washing machine out, Dr Axon, on the front and within two days the ragbone men had done the job!" (NP2),
>
> "Which is important because I was servicing the damn thing at the time. So in effect, someone had stolen it!" (NP1),
>
> "Very enthusiastic ragbone men in some areas. Some may say efficient" (NP3),
>
> "It's efficient alright!" (NP2),
>
> "We're sustaining some bugger from Bentilee with an income!" (NP1),

"Saving money on energy bills" (NP7),

"Not sure really" (NP8).

Participants provided a range of descriptions that reflect their understanding, demonstrating that participants' main understanding is associated to outcomes of CBCRS (i.e. improving the quality of the local environment; saving money on energy bills; reducing waste; saving money on petrol; and engaging people with undertaking further action in a project). Although generally unaware of CBCRS in their local areas, this finding suggests that participants understand there are positive outcomes from schemes within communities.

Equally, participants acknowledge that some community enterprises (notably electrical and furniture recyclers) may result in negative outcomes. Whilst participants discussed this in a light-hearted manner, they acknowledged that this did result in loss of property and inconvenience, and this experience did not dissuade them from viewing CBCRS positively. The positive outcomes of CBCRS are often reported (Alexander *et al.*, 2007; Rogers *et al.*, 2008; Heiskanen *et al.*, 2010; Middlemiss and Parrish, 2010; Mulugeeta *et al.*, 2010), yet the negative outcomes of CBCRS are not reported as frequently by projects or understood by residents and researchers. This, therefore, contributes a new dimension to residents' attitudes towards CBCRS.

Focus group participants further provided additional information about their cognitive engagements with CBCRS. Sections 7.2.2.1 to 7.2.2.5 indicate what specificities that participants know, and understand, about CBCRS and reflect the salient cognitive engagements with CBCRS amongst participants in this study.

7.2.2.1. Collective responsibility, action and other people's (non)participation

Collective responsibility, action and other people's (non)participation has been a recurring theme throughout this research. Section 5.5.2 and 5.5.4 indicated that action to address climate change was a collective responsibility and was beneficial for substantial reductions of carbon emissions for the benefit of future generations.

In Section 6.3.1 participants identified collective action as a key component of sustainable living, particularly within a community context. Collective action was viewed as part of a concerted communal effort to address climate change and an enabler to sustainable living in Section 6.3.3.3. Here, participants identify that collective responsibility, action and participation was a key dimension of their cognitive engagement with CBCRS, to effectively address climate change:

> "It depends on how many people do it though, because there's no point in having something in your local area if no ones going to go and take an interest in doing something about it" (NP7),
> "Not everyone would do it. There would be some people who would be really, really good, and then there are some people who wouldn't" (CP4),
> "They don't all think the same" (CP3),
> "That's life at this point in time. 50-60% may say that it's a good idea and do something, but 40% couldn't be bothered anyway" (CP2),
> "It's not just one person who needs to worry, it's the whole nation. Everyone should work together" (NP8).

These statements demonstrate that participants understand that collective responsibility and participation is integral for CBCRS to be successful, as NP7 comments that there is "no point" in establishing a project in a community should no one take interest and actively participate. NP7 suggests that affective engagements with (particularly interest in), and active participation in, CBCRS is required especially for its development to be justified. Participants from Congleton were sceptical about other people's participation in CBCRS, making reference to other people's attitudes towards addressing climate change (Section 5.5.2), specifically those who hold apathetic (Section 5.5.2.5) and disengaged (Section 5.5.2.6) attitudes. Subsequently, participants identify a link between other people's attitudes towards addressing climate change and participation in CBCRS, indicating that those holding more positive attitudes are more likely to actively participate with CBCRS, which is further emphasised by NP8.

Participants are aware of the importance of community participation to the success of CBCRS, and that the greater the number of individuals participating will result in greater reductions of carbon emissions (Wiesenfeld and Sanchez, 2002; Alexander *et al.*, 2007; Rogers *et al.*, 2008), and acknowledge that CBCRS are designed to bring citizens to act collectively on addressing climate change (Heiskanen *et al.*, 2010; Mulugeeta *et al.*, 2010). Yet, participants worry that not all local residents would participate. Acknowledgements of other people's (non)participation could become a major challenge to the efficacy of CBCRS. This point is emphasised by acknowledgements that the concept of taking action to address climate change at the community level is not just a matter for individuals, but more of a collective issue (Uzzell, 2010), and a reflection of attitudes towards CBCRS on a national scale.

7.2.2.2. Organisation of community-based carbon reduction strategies

The organisation of CBCRS was an important dimension of participants' cognitive engagement, particularly concerning the organisational form and function of CBCRS; considered to be integral for the success of a project alongside collective participation. Participants held varying perspectives over the organisational form and function of CBCRS, which generated substantial discussion:

> "Who would start this off? Would it be… the council to help the community or would it be a person? I don't think that doing anything environmentally friendly… can be led by anybody in a community or a council. It can be both" (NP6),
>
> "It needs an organisation to come in to initiate it, I don't think you'd have enough people straight away… but could be… the local council or another organisation" (BP3),
>
> "The people who are going to be in charge would have to know what they were doing and talking about, and how they could do it otherwise it wouldn't work" (BP2),
>
> "Yeah, someone that knows what they're doing" (BP4),

"You would probably need someone to be running it as a project manager full time. If it's part of an organisation, you could get people working and then you're encouraging people… to get involved a lot" (BP3),

"I don't think that there should be an overall leader. I think that it should be equal and everyone inputs their ideas into the table and then have a vote on it" (BP1),

"That's it, because the community group I used to be involved with… it had 4 people who were the chair… and someone looked after the money aspect. The meetings were very open and if people had an idea they could put it forward… they'd get heard. A lot of the time they were acted on as well" (BP2),

"If people don't want to be involved with something where they're just going to be told what to do… they might want to put forward their own ideas. With the voting thing you know that your idea is going to be heard… and used" (BP4),

"The one with the project manager may run in a larger community and… might need that coordination whereas say, in a more smaller, rural community where everyone knows each other already, it'll be better to do it another way. You have to acknowledge that one shoe doesn't fit all" (BP3).

Participants highlight that irrespective of the organisational form in control of a CBCRS, those who take the lead within the initiative should know what they are doing to steer the project in a successful direction (Alexander *et al.*, 2007). BP2 indicates that without this important understanding of the opportunities, challenges and future directions CBCRS could take, the project would ultimately fail to achieve any outcomes.

Questions were raised, uncertainty stated, and differences of opinions discussed with respect to the organisational form of CBCRS. Participants queried who would establish and develop a local CBCRS, questioning whether it would be the LA or by individuals within the community, but believed it could be established either way. This belief demonstrates that, to some extent, they would accept a CBCRS established by their LA or by individuals within their community. BP3 and BP1,

however, disagree with the organisational form of CBCRS, commenting that they believed that a project manager on behalf of an organisation should initiate it, or considered that an overall leader to be inappropriate for a community approach.

BP2 indicates that their previous behavioural engagement with a community project shapes their cognitive engagement with CBCRS. BP2 considers, from their past experience of engagement, that by not having an individual leader but multiple people within the community take control of the project ensured that the initiative was open, fair and acted on suggestions by residents. BP4 supports this and comments that individuals would find it beneficial if they knew that their suggestions were heard and acted upon. Suggestions of an open, democratic and participatory approach to CBCRS would be the most acceptable organisational form of project to local residents. This approach would also help to engender genuine debate and citizen participation about whether and how to address climate change within their local community (Arnstein, 1969; Weisenfeld and Sanchez, 2002; Seyfang and Smith, 2007; Peters *et al.*, 2010; Warren and McFadyen, 2010). This, in turn, may be an opportunity for CBCRS to engage the public with addressing climate change at the community level highlighting the open and democratic nature of such projects.

Yet, BP3 comments that the organisational form of CBCRS may differ according to the type, and scale, of the community in question, specifically, highlighting distinctions between urban and rural communities and senses of community amongst residents. Consequently, BP3 states that "one shoe doesn't fit all" and that CBCRS should be tailored to the needs of the community, taking into consideration community dynamics along with its location. Tailoring participatory engagement approaches to the needs of communities are required to increase the quality, legitimacy and capacity of addressing climate change (Rogers *et al.*, 2008; POST, 2010; Warren and McFadyen, 2010).

Box 7.3: Choices of organisational involvement in community-based carbon reduction strategies
Focus group participants indicate their preference for involvement from various

organisations, and mention local councils; individuals from their communities; and project managers. Survey respondents were also asked what organisations they think should be involved in a CBCRS in their area. Respondent's choices of organisations are listed in Table A9.41.

There was an overwhelming preference, and support, for local businesses (*n*=401) and local government (*n*=392) to become engaged in CBCRS. This support for local organisations highlights a preference for institutions with knowledge about, and prior engagement with, local communities. These results are consistent with those mentioned by focus group participants. This may signify that respondent's believe that such organisations would support local schemes by providing additional resources; financial and material.

Respondent's third preference was for national government to be involved in local projects (*n*=228). There are, however, differences between the three communities surveyed here. More respondents in Northwood (*n*=228) and Congleton (*n*=84) preferred the involvement of national government than respondents in Blacon (*n*=54). This result could highlight respondent's belief that national government has a moral obligation to support local projects (Norton and Leaman, 2004; Poortinga *et al.*, 2006).

Private industries (*n*=228) were also preferred to become involved in a CBCRS. Again, this may suggest that respondents feel that the inclusion of private industries would support community projects by allocating financial resources.

Respondents also identified that other organisations and individuals should be involved in a community carbon reduction project, including: church groups (*n*=14), community groups (*n*=12), schools (*n*=8) and "experts" (*n*=5). The identification of church groups, schools and experts indicates that a small number of respondents in all three communities consider that there is a need for voluntary, educational and research organisations to engage with CBCRS, and businesses and government, indicative of a multi-agency response to addressing climate change at the community level (Alexander *et al.*, 2007).

Participants identify that CBCRS need to be democratic; tailored to the context of the community; sensitive to local needs; and rely on the cooperative actions of community members (Mulugeeta *et al.*, 2010). The organisational form of CBCRS can run bottom-up or top-down, dependent upon the individuals and organisations involved (Schweizer-Ries, 2008; Ockwell *et al.*, 2009). These approaches are distinguished by the level of interaction and ownership that participants have in the community processes of carbon reduction. Participants in this study favour local actors to establish and develop local CBCRS, with support from local organisations such as councils and businesses. This notion of retaining ownership and control of a

local CBCRS demonstrates that participants would be more accepting towards actors who were aware of, and support, the community in ways that they require.

It is often reported that few residents are keen to take an active role in community-based sustainability initiatives and reluctant to assume responsibility (Arnstein, 1969; Smith *et al.*, 1999; Rogers *et al.*, 2008), however, participants in this study clearly identify retaining ownership and control of a local CBCRS, and therefore reject mere forms of tokenistic and consultative participation (Mannarini, 2011). Previous research has found that the opportunity for community control of CBCRS may not be fully considered by residents (Rogers *et al.*, 2008). In this study, participants are clearly considering higher forms of citizen participation, related to community control, demonstrating they are stating their own needs and values whilst permitting them to participate in decisions on addressing climate change at the community level (Wiesenfeld and Sanchez, 2002; Mulugeeta *et al.*, 2010).

7.2.2.3. Sustaining interest to sustain participation

Previous research has highlighted the difficulty in sustaining enthusiasm and participation in CBCRS (Alexander *et al.*, 2007). This is seen as a major challenge to mainstreaming sustainable development and CBCRS, as sustained participation is required to address climate change over long-term time periods, and was reflected in during focus group discussions:

> "If there's only a few after the first meeting who would go, and [be] really enthusiastic, the enthusiasm is going to wane… and then you're left with a handful of people. It depends on their lifestyles and whether that makes it so that they can't make it every week to do things" (NP6),
>
> "If people turn up to these places then they're obviously interested in saving energy and all that, then they're obviously doing it at home if they turn up to places like that" (NP7),
>
> "Not everyone has the time" (NP8).

These comments demonstrates that participants are aware of the need for sustained participation in CBCRS to be successful, indicating that sustaining enthusiasm was essential for participation in CBCRS, particularly over periods of time. Specifically, participants highlight that there is a link between interests in taking action to address climate change and participation in CBCRS. Moreover, participants identify that community participation may fluctuate over time with the development of CBCRS, indicating that if interest and enthusiasm is not sustained then participation will wane. These findings reflect those by Alexander *et al.* (2007), commenting that the challenge remains how to transition from the initial excitement of involvement to sustained participation. Participants highlight how participation in CBCRS is closely related to individuals' affective engagements, and consequently their values (Corner *et al.*, 2014) and identity (Whitmarsh and O'Neill, 2010).

Reference to barriers to living sustainably in Section 6.3.4 were suggested as reasons for enthusiasm and participation drop-off rates, that need to be overcome if involvement is to be maintained over time. Time was considered a major barrier to engaging with, and participating in, CBCRS, suggesting that participants believe participation in CBCRS to be a formal, static, time-consuming activity that should be done at fixed points in time. These comments reflect those mentioned in Section 6.3.4.5 that living in such a "time pressured society", presents challenges to incorporating action to address climate change and live sustainably among competing priorities (Section 5.2). The notion that time is a barrier to incorporating participation in CBCRS may be a result of an understanding that involvement may be challenging and individuals would have to adapt to altering their lifestyle.

The notion of sustaining participation levels in CBCRS is also referred to in Section 7.2.2.4 (CBCRS having to expend effort to engage individuals in community participation).

7.2.2.4. Awareness and participation: Link awaiting activation

One of the key themes that participants highlighted was the relationship between cognitive and behavioural engagements, specifically the link between awareness of

CBCRS (including their aims and activities) with levels of participation. Participants suggest that the advertisement and promotion of CBCRS is essential to garner support for, and involvement in, community projects. Without this advertisement, engaging individuals interests and enthusiasm (affective engagements), participants identify that CBCRS will struggle to engage residents with addressing climate change at the community level:

> "It depends on how you advertise it… just because you've got a drop out doesn't mean that its going to keep going down and down, because if you advertise it, you can have people replacing those that are leaving" (NP5),
>
> "A good advertisement" (NP7),
>
> "Something in The Advertiser or The Sentinel maybe" (NP5),
>
> "Something that's going to attract people! Not think that it's all about recycling so it's really boring" (NP7),
>
> "It's a good way of finding out, because I think if there was something in the area now then we wouldn't know. But if there was something online, and we were made aware of it on there then we probably would go along and find out what it was all about and join in, but obviously we can't until we know where and when things are taking place and things are going on, you can't join in even if you wanted to" (BP2).

These statements demonstrate that participants believe that levels of participation depend upon the efficacy of awareness raising campaigns; advertisement; and dissemination of tailored information (Abrahamse *et al*., 2005). For participants, promotion of CBCRS should be attractive; engage interest; and not focus on one activity, and disseminated through local media avenues that residents identify as a source of reliable information for local activities.

The identification of a link between cognitive and behavioural engagements suggests that considerations of action and participation in community projects are a key dimension of cognitive engagements. Participants, indirectly, identify the existence of an "information vacuum" that acts as an intermediary step between awareness

and understanding of CBCRS and participation. To overcome this vacuum in public awareness and understanding of CBCRS, participants suggest information should be provided that engages interest in CBCRS, focusing on more than one activity or dimension of community projects. Participants are very clear and comment that green activities appear boring and mundane to individuals, and addressing this criticism by capturing the interest of individuals in new, attractive and exciting ways would engage participants more effectively (O'Neill and Boykoff, 2011).

This finding reinforces those in Section 6.3.4.3 highlighting that participants require context specific and tailored information relating to sustainable alternatives to support behavioural responses, which would lead to increased levels of involvement. Tailored information can prove to be an effective method of changing behaviour as this meets the needs of the individual (Abrahamse *et al.*, 2005; Abrahamse *et al.*, 2007), which participants clearly identify in this study, want and, to an extent, need.

Participants suggest that this process of promoting initiatives should not end once a seemingly sufficient number of participants have been initially recruited:

> "I think that people have got to be interested in going in the first instance and then… they've also got to keep the momentum going" (NP6),
> "Advertisement that is going to interest and attract people to actually come in and not think it's something crappy and boring is going on" (NP7).

Participants identify that the dissemination of promotional materials informing local residents of activities by CBCRS that attracts and engages individuals (and make reference to findings in Section 7.2.2.3). Reference is repeatedly made to advertisement that individuals find stimulating in order for them to become interested in participating in community projects, substantiated by participants identifying the ways in which they would like to be engaged by CBCRS.

Despite outlining the barriers to sustaining participation in Section 7.2.2.3, participants indicate that maintaining involvement could be achieved by CBCRS

continuously engaging residents with materials that raise awareness and stimulate interest and enthusiasm predicated on multiple activities, particularly to those who find undertaking behavioural responses to be "boring". Consequently, participants believe that promotion of CBCRS and their activities should be a continuous process that aim to (re)engage participants and nonparticipants alike.

7.2.2.5. Localising action towards addressing climate change

Participants considered that action taken to address climate change in their local area through establishing CBCRS was an advantage, particularly in the context of responding to local needs and the specific values of their community. These statements were related to notions of place identity and senses of community:

> "The advantages are is that you're doing it in your area and not somebody else's area" (NP6),
>
> "I think if you work with people that you know, you might be more inclined to keep up doing what you're doing because you're not going to want to let people down, whereas if its just strangers in some random area then you don't really care if you never see them again and stop going to whatever project is underway" (NP5).

These statements demonstrate that taking action within your own community inherently has multiple advantages, particularly place-based action implemented within the value specific context of the community. Comments reflecting the advantages of localising action within the communities of residents had two distinct features: (1) place identity, and (2) sense of community.

Place identities are relevant for understanding how individuals and communities respond to direct environmental changes; indirect impacts of policies; and interventions designed to tackle or prevent harmful environmental changes (Devine-Wright, 2013). Participants suggest that taking action within their local area is considered an advantage of CBCRS, and identify that positive outcomes would result from participation. Hand-in-hand with this, participants also identify that a motivator

of participation is related to a sense of community, indicating that taking action through continuous participation in CBCRS is a result of showing concern for the well-being of others within the community. This finding could reflect participants' perceptions that taking action to address climate change at the community level may reduce future impacts, and that it's impacts may be increasingly perceived as "local" rather than "distant" (Spence *et al.*, 2012; Devine-Wright, 2013). This finding shows that individuals are not just cognitively engaged with CBCRS (even if one does not exist), but also affectively and behaviourally.

Participants clearly show that they care about taking action within their community; do so for multiple reasons, particularly because of place identity and sense of community; are willing to, and do, take action (Section 6.2.2); and hold positive attitudes towards participation (Lorenzoni *et al.*, 2007; Devine-Wright, 2013; Scannell and Gifford, 2013).

7.3. BEHAVIOURAL ENGAGEMENTS WITH COMMUNITY-BASED CARBON REDUCTION STRATEGIES

Behavioural engagements reflect both active and passive responses (Mitchell and Carbone, 2011; Wolf and Moser, 2011) of (potential) participation in CBCRS. Consequently, behavioural engagements with CBCRS reflect the actions taken whilst participating in such a project (Lorenzoni *et al.*, 2007; Whitmarsh and O'Neill, 2011; Wolf and Moser, 2011).

7.3.1. Behavioural engagements with, and participation in, community-based carbon reduction strategies

Participants identified their willingness to participate in a CBCRS (Section 7.3.1.1), should one be implemented in their local area, and their identified forms of involvement (Section 7.3.1.2).

7.3.1.1. Willingness to participate

Participation is considered to be an essential factor for success in CBCRS (Weisenfeld and Sanchez, 2002; Alexander *et al.*, 2007; Mannarini, 2011). Participants were asked

about, and indicated, their willingness to participate in a local CBCRS, should one be implemented:

> "I would like to take part" (NP2),
> "I would participate… if it was something that seemed like a good idea, because a lot of them, you look at it and think that… you could do something different. If it was something that I would be interested in, I'd definitely participate. I'd make sure my parents knew about it and the rest of my family and tell them why it was so good as well" (NP4),
> "It depended on the scheme really wouldn't it? What they introduced" (NP3),
> "I think it would be nice for the community to get involved but I think it's very idealistic" (CP1),
> "You've got to make it simple" (CP5),
> "I believe in schemes like that which would help people get involved" (CP2).

These statements are indicative of all focus group participants in this study; commenting that they would participate, or that their involvement depended on the type of scheme to be implemented within their local community. Participants who commented that their involvement was dependent upon what the project included, stated that they would be willing to participate and share their positive experiences with others, consequently disseminating their experience through social networks thus creating and reinforcing new social norms and practices. Additionally, participants stated that they consider schemes that would help local residents become involved (whether actively or passively) as a positive, yet idealistic notion.

Consequently, the majority of participants suggested that they would be willing to participate in CBCRS. Whilst this finding suggests that participants consider CBCRS to be a positive concept, there is also some reluctance amongst participants with respect to their behavioural engagement. This reluctance reflected participants' considerations whether the project established in their area would be an effective method of addressing climate change. However, this efficacy was not specified

further in terms of whether it applied to the activities undertaken (i.e. the diversity of activities) or the impacts of these.

Section 7.3.1.2 highlights participants' identified methods of engaging with, and participating in CBCRS.

7.3.1.2. Methods of participation

Alongside willingness to participate, participants identified numerous ways in which they could become personally involved and contribute to CBCRS:

> "Publicity… and helping out with producing things like a community newsletter and you could put in like… when meetings are going to be and what is going to be discussed in the local meetings… [and] what's going on to keep people informed" (BP1),
>
> "So much can be done online… these days. Maybe [a] newsletter might work for certain people and social media would work as well" (BP3),
>
> "That would cover a big area as well. That would be more effective. That might make a few people think "well I've got nothing to do today and I've got some spare time, I'll just pop along" and gets people to think about it and join in" (BP2),
>
> "Especially the older generations… they have time on their hands and they may want to get involved in something" (BP4),
>
> "It's a wide community. If each person and organisation had involvement then you could pool resources more, you get different ideas and you can start events together" (BP3).

Participants suggested that they could become involved with publicity and promoting activities within the wider community. Participants distinguished between two mediums of advertising and publicity; via newsletters and traditional print methods, and online forums including social media (i.e. Facebook and Twitter). Subsequently, participants acknowledged that the two methods combined would reach more people, and would be an effective method of disseminating information

to residents. Reference is made to actively engaging with CBCRS to promote activities to engage others in the process. This identified method of participation could be viewed as "delegated power" on Arnstein's (1969) ladder of citizen participation. On this level, citizens obtain the majority of decision-making processes.

Participants considered information might trigger responses for individuals to engage with CBCRS, cognitively or behaviourally, with reference made to individual responses to this awareness raising either almost immediately or over a period of time. Furthermore, participants identified that different types of people (i.e. older generations) and organisations may want to become involved, to cooperate on developing events to engage residents with CBCRS activities. Participants identify that the involvement of residents alone is insufficient to address climate change, and suggested that organisations should participate to support carbon reduction practices (Section 7.2.2.2). This identification of other actors and multi-agency responses to addressing climate change is synonymous with the definition, and practices, of CBCRS (Section 3.5).

Along with voluntary actions from adults, participants also identified children in the local community volunteering to support activities within CBCRS:

> "It would be a good opportunity for children to volunteer and things. It's things that look good on a CV, so you can get schools involved and planting your own veg. They're the things that people… want to see you get involved with, put it on your CV and get some experience" (BP4).

Identifying volunteering on behalf of children within the community was also seen as a method of behavioural engagement. This suggestion highlights that participants consider any individual within the local community can undertake participation in CBCRS. The AHGCNP exemplifies children at the local primary and secondary schools actively participate in growing vegetables (Alexander *et al.*, 2007). Participants acknowledge that CBCRS should be inclusive, and not marginalise potential

participants, irrespective of age or ability. This attitude towards participation demonstrates that the public are in favour of wide civic and community engagement, and indicate that the theme of collective action and responsibility for addressing climate change at the community level is diverse, inclusive and multifaceted.

Attendance at meetings was also identified as a method of participating in CBCRS, specifically identifying that attendance would provide participants with ideas of methods of participation:

> "I suppose going to the first initial meeting and seeing what's going on, and obviously if it isn't for you then you don't go again. You contribute and see how far forward they are going to take environmental issues they're considering" (NP6).

Participants considered attending local meetings would be an ideal method of initial engagement with CBCRS. Following this, participants indicated that they would be able to gain an understanding of the project and its activities, and considered that contributing at this initial stage is important. Previous research indicates that meeting attendance is a key success factor in CBCRS (Alexander *et al.*, 2007; Rogers *et al.*, 2008), particularly to gauge the acceptability of projects and their activities. In this study, participants are keen to understand the nature of CBCRS and contribute to meetings that decide the direction initiatives will take. This demonstrates that residents are willing to become reasonably active participants in CBCRS.

Participants stated that their identified method of participation closely related to existing skills they already possessed, used on a daily basis or used within another project. Previous research states that CBCRS suffer from intrinsic challenges including the need for particular skills and resources, develop and rely on people with limited power, resources and ability to influence others (Middlemiss and Parrish, 2010; Seyfang, 2010; Warren and McFadyen, 2010). These findings suggest that participants readily identify methods of engagement that have more power to influence others to become involved. The challenge for CBCRS is to create an

environment where individuals feel, and do, have the power, resources and ability to influence others and make real contributions to addressing climate change, thus responding to the needs of local residents (see Section 6.3.4.9).

These findings here are consistent with those from survey respondents who identify a range of methods for participating in CBCRS. Survey respondents' choices for engaging with, and participating in, a CBCRS are outlined in Table 7.2.

Table 7.2: Identified methods of engaging with, and participating in, community-based carbon reduction strategies							
	Aware of community project			**Not aware of community project**			
Methods of participation	**Blacon**	**Congleton**	**Northwood**	**Blacon**	**Congleton**	**Northwood**	**Total**
None	8 (20%)	1 (16.6%)	1 (10%)	63 (35.6%)	67 (35.3%)	52 (26.5%)	192 (31%)
Don't know/not sure	14 (35%)	2 (33.4%)	2 (20%)	12 (6.8%)	44 (23.2%)	50 (25.5%)	124 (20%)
Any way I can	0 (0%)	0 (0%)	0 (0%)	17 (9.6%)	26 (13.7%)	29 (14.8%)	72 (11.6%)
Attend meetings	11 (27.5%)	0 (0%)	1 (10%)	16 (9%)	22 (11.6%)	12 (6.1%)	62 (10%)
Keep up to date	3 (7.5%)	1 (16.6%)	0 (0%)	19 (10.7%)	13 (6.8%)	17 (8.7%)	53 (8.7%)
Participate in scheme (undertake action)	3 (7.5%)	2 (33.4%)	6 (60%)	19 (10.7%)	3 (1.6%)	20 (10.2%)	53 (8.7%)
Volunteer (campaign or awareness raising)	1 (2.5%)	0 (0%)	0 (0%)	13 (7.3%)	7 (3.7%)	6 (3.1%)	27 (4.3%)
Participation dependent on nature of scheme	0 (0%)	0 (0%)	0 (0%)	10 (5.6%)	1 (0.5%)	6 (3.1%)	17 (2.7%)
Plan/organise part of scheme	0 (0%)	0 (0%)	0 (0%)	4 (2.3%)	5 (2.6%)	3 (1.5%)	12 (1.9%)
Take advantage of opportunities	0 (0%)	0 (0%)	0 (0%)	4 (2.1%)	2 (1.1%)	1 (0.5%)	7 (1.2%)
Total:	*n*=40 (100%)	*n*=6 (100%)	*n*=10 (100%)	*n*=177 (100%)	*n*=190 (100%)	*n*=196 (100%)	*n*=619 (100%)

Overall, 303 respondents (48.9%) identified a method of engaging with CBCRS; 192 respondents (31%) did not identify a method; and 124 respondents (20%) were uncertain about a method of engagement. This implies that around half of respondents would like to participate in CBCRS. While 48.9% identified a method of engaging with CBCRS, those who did not identify a method or were unsure could be explained by a lack of cognitive engagement with, and understanding of, CBCRS and their activities. Similar to what Blake (1999) and Kollmuss and Agyeman (2002) describe as the "value-action gap", this finding indicates an "awareness-involvement gap" suggesting there is limited, or no, understanding about CBCRS and its activities thus resulting in uncertainty about how to participate in such projects. This result reinforces the assertions in Section 7.2.2.4 that understanding is required to appreciate the various methods of engaging with CBCRS, and activities. This presents implications for CBCRS aiming to meaningfully engage the public with addressing climate change.

Following this, respondents indicated that they would undertake, and are open to, a range of behavioural engagements, for example 11.6% of respondents (*n*=72) stated they would participate in any way they could. Whilst this response does not pinpoint a specific method of participation, it also illustrates a level of positivity towards potential involvement. Survey respondents favoured low level methods of participation: attending meetings (*n*=62, 10%); keeping up to date with the project (*n*=53, 8.7%); and generally participating (*n*=53, 8.7%), suggesting that residents are open to initial engagement with CBCRS. These results reveal how residents envisage themselves participating, and could be used as a starting point for future activities and further dialogue (Rogers *et al.*, 2008; Gerrard, 2010). These methods could also be seen as resolving the aforementioned "awareness-involvement gap" by increasing cognitive engagements with CBCRS.

These results indicate that these methods of participation are not consistent with the higher rungs of Arnstein's (1969) ladder of citizen participation where residents are in control and are fully aware of how to become involved in a CBCRS.

Respondents suggesting that there are no ways of participating in the project further substantiate this point. It is acknowledged that individuals aware of the project are not necessarily active participants in the project. Responses including keeping up to date with relevant information about the project and attending meetings indicates a level of passivity amongst those who are aware of, and to some extent, understand the nature of what CBCRS include. Few respondents noted higher levels of participation including volunteering (*n*=27, 4.3%) and organising an aspect of the project (*n*=12, 1.9%). These results present challenges for CBCRS wishing to engage residents in playing a substantial role in community initiatives, leading to higher levels of citizen and community participation (Arntsein, 1969; Rogers *et al.*, 2008).

Table 7.3 shows the statistical variations between identified methods of engagement with CBCRS.

Table 7.3: Variation between respondents identified methods of engagement with addressing climate change at the community level

Respondents' identified methods of engagement	**Groups with significantly higher proportions of responses**	
	Percentage	**Characteristic**
Identified methods of engagement	51.5%	Hear about climate change information on a daily-weekly basis (x^2=130.014, df=8, p<0.000)
	31.7%	Gain climate change information from radio sources (x^2=44.215, df=2, p<0.000)
	57.4%	Gain climate change information from newspapers (x^2=54.212, df=2, p<0.000)
	18.5%	Gain climate change information from family and friends (x^2=6.773, df=2, p<0.034)
	36.3%	Discuss climate change information on a monthly basis (x^2=219.287, df=8, p<0.000)
	86.1%	Personally concerned about climate change (x^2=372.149, df=4, p<0.000)
	45.2%	Hold a "concerned" attitude towards (addressing) climate change (x^2=391.746, df=10, p<0.000)
	86.8%	Not sceptical about an element of climate change (x^2=142.592, df=2, p<0.000)
	96.7%	Prepared to take action to reduce personal carbon emissions (x^2=377.791, df=2, p<0.000)

	45.9%	Prepared to take low impact actions frequently (Action Level 2) (x^2=393.327, df=2, p<0.000)
	18.8%	Member of environmental organisation (x^2=820.247, df=2, p<0.000)
	38.9%	Readership of environmental magazines (x^2=63.318, df=2, p<0.000)
	45.9%	Viewership of environmental programmes (x^2=71.953, df=2, p<0.000)
	59.7%	Educated to further education level and above (x^2=33.532, df=8, p<0.000)
	48.8%	Employed full time (x^2=112.505, df=10, p<0.000)
	49.2%	Ages 36-55 (x^2=34.049, df=10, p<0.000)
Unsure about methods of engagement	37.9%	Hear about climate change information on a monthly basis (x^2=130.014, df=8, p<0.000)
	24.6%	Gain climate change information from radio sources (x^2=44.215, df=2, p<0.000)
	40.3%	Gain climate change information from newspapers (x^2=54.212, df=2, p<0.000)
	11.3%	Gain climate change information from family and friends (x^2=6.773, df=2, p<0.034)
	36.3%	Discuss climate change information on a occasional basis (x^2=219.287, df=8, p<0.000)
	61.3%	Personally concerned about climate change (x^2=372.149, df=4, p<0.000)
	66.9%	Not sceptical about an element of climate change (x^2=142.592, df=2, p<0.000)
	88.7%	Prepared to take action to reduce their carbon emissions (x^2=377.791, df=2, p<0.000)
	45.2%	Prepared to take low impact actions frequently (Action Level 2) (x^2=393.327, df=2, p<0.000)
	16.1%	Member of environmental organisation (x^2=820.247, df=2, p<0.000)
	40.3%	Readership of environmental magazines (x^2=63.318, df=2, p<0.000)
	46.8%	Viewership of environmental programmes (x^2=71.953, df=2, p<0.000)
	41%	Educated to further education level (x^2=33.532, df=8, p<0.000)
	34.7%	Employed full time (x^2=112.505, df=10, p<0.000)
	45.9%	Ages 26-45 (x^2=34.049, df=10, p<0.000)
Did not identify methods of	39.6%	Hear about climate change information on a monthly basis (x^2=130.014, df=8, p<0.000)

engagement	24%	Gain climate change information from newspapers (x^2=54.212, df=2, p<0.000)
	10.9%	Gain climate change information from family and friends (x^2=6.773, df=2, p<0.034)
	71.4%	Never discuss climate change information (x^2=219.287, df=8, p<0.000)
	67.2%	Not personally concerned about climate change (x^2=372.149, df=4, p<0.000)
	41.7%	Hold an "apathetic" attitude towards (addressing) climate change (x^2=391.746, df=10, p<0.000)
	65.1%	Sceptical about an element of climate change (x^2=142.592, df=2, p<0.000)
	82.3%	Not prepared to take action to reduce their carbon emissions (Action Level 0) (x^2=377.791, df=2, p<0.000)
	10.9%	Viewership of environmental programmes (x^2=71.953, df=2, p<0.000)
	43.8%	Educated to secondary level (x^2=33.532, df=8, p<0.000)
	32.3%	Unemployed (x^2=112.505, df=10, p<0.000)
	20.2%	Ages 46-55 (x^2=34.049, df=10, p<0.000)

Box 7.4 interprets the main findings from the chi-squared analysis, and the significant differences between individuals with different characteristics and identified methods of engagement with CBCRS.

Box 7.4: Differences between individuals and identified methods of engagement with CBCRS

From this analysis, it is clear that those who hear about climate change related information on a regular basis, and discuss related issues on a monthly basis are more likely to identify a method of participation in CBCRS, substantiated by those who gain information from newspapers and family/friends also more likely to identify a method of participation. Conversely, those who hear about climate change on a monthly basis and never discuss climate change are more likely to be unaware of methods of participation. This demonstrates that those who are more engaged with, and informed about, climate change on a regular basis are more aware of methods of participating in CBCRS (Anker-Nilssen, 2003; Dunlap and McCright, 2008).

Additionally, those respondents who are personally concerned about addressing climate change, specifically holding "concerned" attitudes are more likely to be aware of methods of participation, whereas those who are not personally concerned, and hold "apathetic" attitudes are more likely to be unaware. This

finding suggest that's those with higher pro-environmental values and concerned about climate change are more likely to be aware of methods of participation in CBCRS (Poortinga *et al.*, 2002). Moreover, those who claim to not be sceptical about elements of climate change are also more likely to be aware of methods of participation, whereas those who are sceptical are more likely to be unaware. These findings suggest that those with lower environmental values, lower concern, and higher scepticism, towards climate change may have a deficit in understanding of what actions they can take to participate in CBCRS.

With respect to behavioural responses, those willing to take measures (particularly low-impact measures frequently) are more likely to be aware of methods of participation or unsure of methods of participation. Conversely, those not prepared to take behavioural responses to address climate change are more likely to state that they are unaware of methods of engagement with CBCRS. This finding suggests that there may be consistency between willingness to take personal actions, and methods of engagement, indicating that by undertaking behavioural responses they identify themselves as participating.

With respect to socio-demographic values, those educated to further education level and above; employed full time; and middle-aged are more likely to be aware of methods of engagement. Conversely, those educated to secondary level; unemployed; and late middle-aged are more likely to be unaware of methods of engagement with CBCRS. This suggests that levels of formal education, income and age are indicators of who is more aware of methods of engagement (Anker-Nilssen, 2003; DEFRA, 2007; Eurobarometer, 2009; Upham *et al.*, 2009).

7.3.2. Identifying the enablers of behavioural engagement and participation

Alongside their identified, and preferred, methods of engaging with CBCRS, participants also acknowledged that to increase levels of involvement amongst residents specific areas needed to be addressed. These are outlined in Sections 7.3.2.1 to 7.3.2.4.

7.3.2.1. Awareness and education

Participants continually made reference to an appropriate level of awareness raising and education about CBCRS in their local community. Two dimensions of awareness and education were raised:

> "If we knew more about them, what we can do and how we can do it. Also if there's convenient times, you might be busy or tired" (BP4),

"It would be good to get people to see the benefits of using low-carbon alternatives that reduce the footprint. It's got to start where it becomes the normal way of life and I think that's what a community scheme has got to do… the only way you can do that is with children in schools, to engage them at a young age" (CP1),

"My children are five, so they've only lived for five years so they can't have that importance embedded into them. It's like with me, I understand it but… I haven't seen drastic changes. If you can embed it when they're young, it's like planting a seed… a habit" (CP4),

"It's back to what you said earlier. Education is the key here" (NP1),

"It's almost the top one" (NP4).

The statements above indicate that participants identify two dimensions of awareness and education should be provided about CBCRS: (1) awareness and education about CBCRS, their aims and activities; and (2) integrating CBCRS within an educational context to promote alternative and sustainable living to schoolchildren.

Participants highlight that there is a definitive link between cognitive and behavioural engagements. This further reinforces the link awaiting activation in Section 7.2.2.4 between awareness and participation as well as potentially resolving the "awareness-involvement gap". In this context, reference is made to awareness of projects and information detailing methods of involvement. BP4 further questions whether participation would be required at particular times and whether individuals could engage with CBCRS at times convenient to them, thus overcoming barriers to integrating participation (Section 7.3.3.2). Further reference is made to educating individuals about CBCRS should revolve around the positivities of participation, reinforcing findings in Sections 6.3.4.7 and 6.2.2.4 that "selling the positives" would enable increases in behavioural responses and participation in CBCRS.

Despite previous research suggesting that awareness raising will not modify behaviour alone (Barr and Gilg, 2005; Verplanken, 2011), this finding supports the existence of an "information vacuum" that may result in nonparticipation because of

a lack of understanding and cognitive engagement with CBCRS. Addressing this vacuum may lead to increased participation rates amongst residents. Without doing so, a lack of understanding, apathy and behavioural engagement with CBCRS may develop, and will present substantial challenges for CBCRS attempting to engage the public with addressing climate change at the community level.

Participants were also overwhelmingly in favour of integrating the role of CBCRS within an educational context. Their support for this measure was justified by instilling a sense of sustainability within the minds of younger generations so that addressing climate change at the community level becomes a "normal way of life". CP1 comments that the "only way" this can be done, is engaging schoolchildren with such information. CP4 further comments that "embedding" sustainable living into children at a young age would "plant a seed" and pro-environmental "habits". Consequently, the role of education is of paramount importance to participants in engaging younger generations with addressing climate change; sustainable living; and CBCRS to create pro-environmental habits and maintain sustainable living over long-term periods in, and for, the future. Participants' comments subsequently suggest a role for education for sustainable development (Butt, 2011; Barth and Michelsen, 2013), promoting sustainable living at the community level.

Survey respondents who were, and were not, aware, of a CBCRS were asked what would motivate them to participate (more) in a local CBCRS (Table 7.4).

Table 7.4: Identified motivators to take action towards addressing climate change at the community level							
	Aware of community project			**Not aware of community project**			
Motivator	**Blacon**	**Congleton**	**Northwood**	**Blacon**	**Congleton**	**Northwood**	**Total**
More information/ feedback	26 (65%)	2 (33.3%)	2 (20%)	52 (28.8%)	27 (14.2%)	41 (20.9%)	150 (24.2%)
Financial incentives	1 (2.5%)	0 (0%)	1 (10%)	27 (15.3%)	18 (9.5%)	37 (18.9%)	84 (13.6%)
Other people's (non) participation	0 (0%)	0 (0%)	0 (0%)	16 (9%)	38 (20%)	27 (13.8%)	81 (13.1%)
Nothing	2 (5%)	0 (0%)	2 (20%)	27 (15.3%)	26 (13.7%)	19 (9.7%)	74 (12%)
Convenience/more time/ removing barriers	0 (0%)	1 (16.7%)	2 (20%)	8 (4.5%)	30 (15.8%)	30 (15.3%)	71 (11.5%)
Subsidies for measures	0 (0%)	0 (0%)	0 (0%)	13 (7.3%)	21 (11.1%)	14 (7.1%)	48 (7.8%)
Personal benefits/ increase personal involvement	3 (7.5%)	0 (0%)	1 (10%)	15 (8.5%)	9 (4.7%)	11 (5.6%)	39 (6.3%)
Understanding reasons to take action	3 (7.5%)	0 (0%)	1 (10%)	9 (5.1%)	12 (6.3%)	10 (5.1%)	35 (5.7%)
Don't know/not sure	5 (12.5%)	0 (0%)	0 (0%)	10 (5.6%)	8 (4.2%)	5 (2.6%)	28 (4.5%)
Organised scheme/ Changes to the scheme	0 (0%)	3 (50%)	1 (10%)	1 (0.6%)	1 (0.5%)	2 (1%)	9 (1.5%)
Total:	*n*=40 (100%)	*n*=6 (100%)	*n*=10 (100%)	*n*=177 (100%)	*n*=190 (100%)	*n*=196 (100%)	*n*=619 (100%)

24.2% of survey respondents identified that they believed more information and/or feedback was required to deepen understanding of (engaging with) CBCRS and their activities. Despite previous research indicating that awareness raising does not lead to behavioural change, respondents identify an "information vacuum" relating to uncertainty surrounding methods of participate. This finding supports focus group findings in Section 6.3.4 that more information and feedback would enable sustainable living, and by extension potential behavioural engagement. Related to findings in Section 7.2.2.4, this result poses challenges for engaging people with CBCRS. Information is commonly used to promote energy conservation behaviours and serves to increase householder's awareness and possibilities to reduce energy use (Abrahamse *et al.*, 2005), yet information alone is unlikely to motivate behaviour change (Barr and Gilg, 2005; Darnton, 2008; Moloney *et al.*, 2010). Feedback, however, is often applied to promote energy conservation and consists of giving householders information about their energy consumption or energy savings, and can influence behaviour because householders can associate certain outcomes such as energy savings with carbon reduction practices (Abrahamse *et al.*, 2005).

Financial incentives (*n*=84, 13.6%) and other people's (non)participation (*n*=81, 13.1%) were also considered as motivators for participating (more) in CBCRS. Financial rewards can serve as an extrinsic motivator to act pro-environmentally. Numerous studies have highlighted that when applied, individuals continue to perform pro-environmental actions however, when the rewards are withdrawn actions begin to cease (Oskamp *et al.*, 1991; Werner *et al.*, 1995; Abrahamse *et al.*, 2005; Shaw and Maynard, 2008; Evans *et al.*, 2013; Thogersen, 2013). Respondents noting other peoples (non)participation and contribution highlight an awareness of the social nature of behaviour (Jackson, 2005) and that numerous advantages are associated with collective action, consistent with findings in Section 6.3.4.8. This result is indicative of the "I will if you will" phenomenon (Whitmarsh, 2009b), the idea that acting as part of a collective encourages others to reduce their carbon emissions.

Although not identifying the reasons why nothing would motivate them to address climate change (n=72, 12.8%), this finding may indicate that these respondents are resistant to taking action, and therefore do not accept CBCRS in their locality (see Section 7.4.2). Consistent with focus group findings in Section 6.3.4.2 and 6.3.4.5, respondents identified that removing barriers to carbon reduction or making it more convenient (*n*=68, 12.1%), and providing subsidies for particular measures (*n*=48, 8.5%) were also mentioned. CR118 stated that they would reduce their carbon footprint "if it was more convenient to integrate these actions into your lifestyle". Previous studies have highlighted that respondents often cite inconvenience as a reason for non-participation in sustainability projects (Vining and Ebreo, 1990; Oskamp *et al.*, 1991; Perrin and Barton, 2001) (discussed in Section 7.3.3.2).

Potentially related to the "information vacuum" highlighted, 4.5% of respondents suggest that they don't know what would motivate them to participate (more) in a CBCRS. This result asserts that there is a level of epistemic ambivalence in the minds of residents with respect to participating in CBCRS. This could be a result of the relationship between understandings of CBCRS and participation, and without being addressed epistemic ambivalence and resultant nonparticipation cannot be transformed into behavioural engagement.

These responses can be related to Arnstein's (1969) ladder of citizen participation, and suggest a (potential) lack of meaningful participation with CBCRS, particularly as respondents do not feel like they have a scope of control over the project, and thus categorised as relatively low level participation. These findings contrast focus group responses (Section 7.3.1.2) that suggest that participants would be willing to take a multitude of low and high level responses.

7.3.2.2. Tailored advice and support

Alongside awareness raising and education, providing tailored advice and support to participants would enable (sustained) participation in CBCRS:

> "It comes back to… benefitting you yourself… sometimes people think that it's not personally affecting me it's… just for the community then people might not be as willing to participate but if you can make it relevant to everyone like you're getting advice and tips and all that for yourself… then people might think they might just go and have a look" (BP2),
>
> "If I knew more about the projects and maybe… if they had schemes that could help you" (BP1).

Participants commented there needed to be a concerted effort by CBCRS to encourage involvement, consisting of increasing awareness and understanding; providing information making addressing climate change personally relevant; and offering advice and support for enabling participation.

These findings are consistent with those in Section 6.3.4.4 where participants identify that tailored feedback would enable sustainable lifestyles, and consequently believe that tailored advice and support would also encourage participation in CBCRS. Tailored advice and feedback have been previously utilised to modify behaviours, and have proven to be efficient interventions for behavioural change (Abrahamse *et al.*, 2007). This finding presents an opportunity for mainstreaming sustainable development and CBCRS. The effectiveness and sustainability of CBCRS lies in the durability of attitudinal and behavioural changes in the community, developed through absorbing available advice relating to addressing climate change and acting on it (Peters *et al.*, 2010). Providing tailored advice, feedback and support could be employed to engage individuals with behavioural responses and encourage participation in CBCRS, and support attitudinal and behavioural changes (Verplanken, 2011).

This "two birds with one stone" effect is consistent with participants' statements in Section 6.3.4.9, where reference is made to "pop up shops" providing guidance and support with behavioural responses, and in this context participation in CBCRS. Participants distinguish between generic awareness raising and tailored advice. In the minds of participants, awareness raising may be achieved through mass

dissemination of information, however tailored advice and support can only be offered by engaging with a person who understands individual contexts and provides guidance and feedback accordingly. This distinction provides a unique opportunity for CBCRS, and comparisons can be made with existing projects which encompass a multitude of interventions that aim to benefit local residents, and engage them with addressing climate change (Alexander *et al.*, 2007; Heiskanen *et al.*, 2010; Middlemiss and Parrish, 2010).

7.3.2.3. Financial incentives

Although previous research has highlighted that financial incentives do not sustain behavioural responses (Abrahamse *et al.*, 2005), participants considered that incentives would encourage involvement in CBCRS:

> "There should be some things though that [are] cheaper and especially with the more efficient and more advanced models of things" (CP2),
>
> "That way you'd get more people to participate because they can see a direct benefit, it might be financial but… that's what people want or you won't get them to participate" (CP3),
>
> "There's got to be some sort of financial incentive. Any other incentive, not everyone is bothered about wildlife and climate change and future generations… the only thing that people are bothered about, unfortunately, in this day in age, is money" (CP1).

The points raised in the statements above were raised in every focus group, and were a significant theme relating to an enabler and barrier to behavioural responses; sustainable living (Section 6.3.4.2); and participation in CBCRS. Participants identified that sustainable alternatives are too costly, and despite being viewed as products that do not negatively contribute to environmental impacts participants were irritated and, in some ways, dejected that little was being done to make sustainable items more affordable. These comments reflect what Jackson (2011) argues in favour for: that sustainable alternatives should be become more affordable to encourage individuals to purchase such products.

Participants view the cost of sustainable alternatives and participation in CBCRS as being interconnected; should sustainable items be more affordable, more individuals would consider participating in CBCRS as they view "direct benefits" as a result. This finding is important, particularly as participants consider other individuals to be financially minded when deliberating involvement in CBCRS, and identify that not everyone is "bothered about wildlife and climate change". This finding is consistent with other studies (Brandon and Lewis, 1999; Stern, 2000; Whitmarsh, 2009b) and with those in Section 6.3.2.1 relating to consideration of differing attitudes towards sustainable living and a lack of concern for environmental issues (Section 5.2).

This link between financial incentives and participation may stem from the overly reported financial benefits presented by the media, energy companies and government. Substantial attention is drawn to "saving money on energy bills" as a direct consequence of taking measures to address climate change (Brandon and Lewis, 1999). It is well established that financial incentives do not sustain behavioural responses (Abrahamse *et al.*, 2005), and by extension participation in CBCRS. The notion that financial incentives may enable involvement in addressing climate change has become embedded within the minds of participants. This presents major challenges for CBCRS engaging individuals and communities with addressing climate change if residents only consider financial gains or rewards as a motivator for participation. One possible method of overcoming this challenge may be to ensure individuals think of the environmental benefits of sustainable actions, which may lead to spillover effects into other behaviours (Evans *et al.*, 2013; Thogersen, 2013).

7.3.2.4. Promotion, advertisement and visual stimuli

Participants suggested that a range of organisations and media outlets should promote CBCRS and their activities, as it would reach diverse audiences:

> "Promotion. Advertising. Although I haven't [had] a copy delivered to me in Birches Head, we do have an Our City and it talks about initiatives in this city

and what they are doing to… encourage carbon efficiency. Those are the platforms to get through to people" (NP2),

"The Advertiser is delivered to most homes… we get it every week… but it is free. It's an ideal opportunity to educate people" (NP3),

"That is a good way of educating people but… you can't force them to pick it up and read it. They're just going to pick up their mail, sort out what's important and what's not and just put it straight in the bin" (NP4),

"How many years ago in the 80's when we had the big aids campaign on the TV, why can't there be campaigns like that?" (NP3),

"The message can get across!" (NP1),

"It does very often come down to the cost element. Public service messages should be at a cheaper cost to get that type of advertisement. They could be doing so much more for the greater good for the population by allowing some airtime for these type of campaigns" (NP2).

Participants highlight that they are aware of multiple ways in which promotion and advertising of addressing climate change at the community level could be achieved on a wider scale. In the context of their own localities, participants were aware of media outlets that advertise, and promote, community initiatives and considered that these existing communication channels would be beneficial to educate, and promote, sustainable living within communities, particularly as they are trusted local outlets (Whitmarsh, 2009a). Although this is a positive method of engaging the public with CBCRS, participants conceded that individuals cannot be forced to read such material and may not be influenced by it, as it may not consider it interesting or important, indicating that participants are aware that pre-existing attitudes reject dissonant information (Nickersen, 1998; Upham *et al.*, 2009).

Large-scale media campaigns were considered to be another method of advertising, and promoting, addressing climate change that may enable participation in CBCRS, as such initiatives would be promoted as acceptable ways of living. NP2 supports this suggestion and comments that such campaigns would promote a cause for "the greater good", however such campaigns often come down to financial

considerations. The UK Governments' efforts to promote low-carbon living have principally focused on using communication campaigns aiming to raise awareness of climate change, the role of energy consumption and use, and encouraging individual/household measures to reduce carbon footprints, for example: "Are You Doing Your Bit?" (Barr and Gilg, 2005; Ockwell *et al.*, 2009); and "Act on CO2" (POST, 2010). However, these media campaigns have been largely ineffective in promoting understanding, engagement with the issue or changing behaviour (Lofstedt, 1995; Hinchliffe, 1996).

Alongside this, participants also mentioned that visual stimuli could be employed across cities and neighbourhoods to promote sustainable living:

> "If they have something visual… [and] if people can see something that's helping the environment and notice that more, they're not going to know about what's running in the background. If they can see… a sign to say this reduces carbon emissions on the side of a bus or something then people are going to notice that… and remember a point" (NP4),
>
> "I saw on a bus the other day "why aren't you on this bus?" and it is thought provoking" (NP2),
>
> "All it takes is a small statement like that and it makes you stop and think "why aren't I on that bus, why am I driving?"" (NP4),
>
> "Something visual like that in this local area "you have saved so much by recycling or something" that's visual, that actually promotes and encourages people" (NP2),
>
> "It's that incentive to make people think about it. If you're stuck in a traffic jam and you saw that bus drive past you" (NP4),
>
> "It's brilliant" (NP2),
>
> "Exactly, you're getting really angry sat in your car when you're not getting to… wherever you want to go… you're going to think "the bus seems quicker"" (NP4).

Visual stimuli were considered to be a strongly effective tool for encouraging behavioural engagement with CBCRS, particularly as it serves as a small motivator to modify behaviour. Consequently, visual stimuli that consist of short information was considered "thought provoking" and may result in active considerations with behavioural responses. Such flash points of information were also considered to be sufficient in changing individuals' perspectives towards behavioural responses, leading to observing the positivities of undertaking measures.

Visual stimuli have great potential to be used as a means to communicate and stimulate public willingness to engage with climate change (Nicholson-Cole, 2005). As images trigger powerful emotional responses, caution is advised to avoid conveying disturbing or misleading visions, or feelings of fear or unease if the point is to provide a meaningful, motivating message to stimulate engagement (Nicholson-Cole, 2005). Visual stimuli clearly have a place in engaging the public with addressing climate change, and can be a powerful tool for stimulating behavioural change (Bell *et al.*, 2004; Nicholson-Cole, 2005), and potentially encourage participation in CBCRS.

This finding supports the results in Section 7.2.1 that promoting behavioural responses and participation in CBCRS should be more visible, and reinforces connections between cognitive and behavioural engagements. Capturing the interest of individuals with respect to addressing climate change is vital if CBCRS are to succeed in facilitating sustainable lifestyles.

7.3.3. Identifying and overcoming barriers to behavioural engagement and participation

Participants also acknowledged that they were aware there were difficulties with (actively) participating in such projects:

> "It's about the benefits and promoting those to people. There will be some people who will participate because it's what they want to do but then there's a lot of people who will take some convincing and… you'll need to tell them that this will help you and… your community" (BP2).

Identifying barriers to participation shows that participants clearly understand the factors affecting engagements with CBCRS, acknowledging that projects will face challenges with attempting to behaviourally engage local residents. Specifically, BP2 comments that CBCRS should engage people with positive messages, and provide individuals with information relating to how involvement is beneficial to them personally in order to convince those who may be initially reluctant to participate. These findings correspond to earlier results (Section 6.3.4.7) relating to participants identifying initiatives that "sell the benefits" of action rather than the difficulty would lead to defeatist and pessimistic attitudes towards addressing climate change being fostered. Consequently, messages within climate change should be framed around the advantages of taking action within a local context to encourage participation in CBCRS (Whitmarsh and Lorenzoni, 2010; Scannell and Gifford, 2013).

This awareness, and understanding, of the barriers to participating in CBCRS allows for an opportunity for local residents to suggest creative solutions to overcome such challenges towards behavioural engagement that can be implemented within the context of their community (Seyfang, 2010). This response would allow for CBCRS to maximise the enablers to participation, and minimise (and overcome) the barriers.

7.3.3.1. Relative importance of addressing climate change

Participants identified that the relative importance of (addressing) climate change had a trickle down effect on people's attitudes, thus exacerbating the constant low ranking of climate change as an important issue by individuals:

> "One of the battles for climate change… is the fact that… the economy and politics will always… take precedence. That's the main thing that they've got to overcome… I can't see it happening in the future" (NP4),
>
> "In the near future! That's why people don't care, there's not enough attention focused on it" (NP3).

The relative importance of (addressing) climate change was considered a barrier to participation in CBCRS, as participants perceived that the economy and political debates were considered to be of more importance. Identifying political and economical debates over addressing climate change was considered to deflect attention away from initiatives that aim to support sustainable living. Consequently, the lack of discussion about, and importance placed upon, addressing climate change resulted in apathy amongst the public. These findings are consistent with those in Section 6.2.1 that in the context of more immediate, tangible and local concerns, climate change is not considered a priority issue or perceived to be a direct personal risk (Giddens, 2009; Upham *et al.*, 2009; Ockwell *et al.*, 2009; Spence *et al.*, 2012; Devine-Wright, 2013). Participants almost suggest that because addressing climate change is not perceived to be of major importance at a national level, and not promoted accordingly, the public therefore may imitate national priorities and focus more on political and economical debates, consequently not perceiving it to be important enough to take action, or participate in local level responses.

7.3.3.2. Integrating addressing climate change at the community level

Participants identified that a significant barrier to participating in CBCRS was that challenges surround incorporating involvements within their current lifestyles:

> "People might not have the time. You come back from work, you just want to put your feet up and then you may not want to spend your weekends doing things like that" (BP4),
>
> "You might have other responsibilities" (BP1),
>
> "It's a lot of effort and commitment, and some people might not want to do that" (BP4),
>
> "I think the biggest one… [is] the time aspect. You get in last thing and then the last thing you want to do is go back out again, when most people just want to sit at home and just relax" (BP2),
>
> "Possibly financial as well. Because it depends where about it is because if you've got to drive there then there is the fuel costs, and if you get asked to

buy stuff for it then people might not be able to do that and then people might not consider themselves to be in the project" (BP3).

Integrating action to address climate change through participation in CBCRS was perceived to be substantial, mainly because of actual and perceived time and financial constraints. Participants identify that active involvement in a CBCRS is "a lot of effort and commitment" that some may not want to contribute towards as much, and suggest this may act as a barrier to participation. These findings reflect the barriers mentioned in Section 6.3.4.5 that alongside other commitments (i.e. family and work), incorporating sustainable practices and involvement maybe difficult for individuals with busy lifestyles, who therefore make choices based on convenience that may not be the most environmentally sensitive decisions and actions.

Previous research highlights that assertions reflecting "time consuming" and "difficult" are often stated when referring to participation in community projects (Werner and Makela, 1998; Perrin and Barton, 2001). This presents a challenge for CBCRS to ensure potential participants that involvement is not arduous and complicated, but simple, attractive, interesting, supporting, and focused on more than one activity, as outlined by participants in this study. Participation should also be presented as flexible and inclusive, and not something to be done at fixed points in time to encourage greater quantity and quality of engagement and participation.

7.3.3.3. (Un)awareness of, and linking, "win-win" outcomes of action with participation

Despite being personally aware of some of the benefits of taking action to address climate change, participants identified that other individuals may be unaware and not make the link between the multiple advantages of behavioural responses and participation in CBCRS:

"It comes down to money sometimes for some people, because some will come to cut down on their costs" (BP2),

> "People don't think about "what I can get out of it" and they could get given tips like growing their own vegetables" (BP1),
>
> "I suppose you see that quite often and people don't make those connections" (BP3).

Although participants indicated that financial incentives would encourage participation in CBRCS, reference was also made to a level of unawareness of additional benefits that may stem from participation. Participants identify that positive outcomes need not always be financial, and that advice on becoming self-sufficient should also be viewed as an outcome on a par with reducing costs on energy bills. Previous research identifies that the majority of individuals take action out of a desire to save money (Brandon and Lewis, 1999; Stern, 2000). Once again, participants make reference to the interconnected spheres of cognitive and behavioural engagement, identifying that not making links between participation and the positive outcomes leads to a barrier of involvement as individuals do not see the value of engaging with CBCRS. Once again, this could be the result of the "information vacuum" not indicating what CBCRS are, do and result in.

There is a perception on behalf of participants that individuals do not make this link between participation and the positive outcomes that may result, or that they have not heard others discuss the benefits of involvement. Consequently, participants consider that there are gaps in the understandings of others, and that awareness and education campaigns may address this (Section 7.3.2.1). This finding suggests, from the perspective of participants, understanding the nature and outcomes of CBCRS is important for prospective participants. However, this finding does not take into account that there may be additional barriers to participation that are unobservable, or participants are not aware of, that may restrict involvement.

7.3.4. Previous experience of engaging with community projects

One participant revealed that they had been involved in a community-based sustainability initiative previously:

"You used to be involved in one!" (BP3),

"It wasn't a carbon project exactly… I was involved in a community group that… took care of the local area and it might have reduced carbon emissions. I suppose it did because we planted trees and plants. It was all about the benefits of doing things. It's more about making people aware of things… it's definitely a good thing if one was established. I got involved… because it was something that I was quite concerned about at the time, in my area" (BP2),

"If there was anything like that here you probably would have got involved in that? But because there wasn't one, you were kind of disconnected with it?" (BP3),

"Yes" (BP2).

The conversational output demonstrates that BP2's previous participation clearly influenced their cognitive and affective engagement with the initiative they were involved with. BP2 comments that they were concerned about environmental issues enough to seek out, and engage with the initiative they identify (substantiating findings in Section 6.2.1 that concern for environmental issues leads to action). BP2 clearly understands the aims of the project; making others aware of actions they could take; the benefits of taking action as part of direct involvement; and participating in a multitude of activities. This finding clearly validates that there are interconnectivities between the three dimensions of engagement: cognitive, affective and behavioural (Whitmarsh *et al.*, 2013). Their willingness to discuss openly their feelings is demonstrated in conversation with BP3, when they question BP2, around their emotional response towards suddenly not participating when they relocated and could not find a similar project in the area BP2 moved to, described as feeling "disconnected".

These findings validate the assertions by Whitmarsh and O'Neil (2011) who argue that engagements with climate change are not linear, and for example, behavioural engagements can precede cognitive engagements. Specifically, these findings suggest that engagements with CBCRS can result in complex interactions between all three dimensions, particularly when individuals are active participants in such

projects. Subsequently, CBCRS (and related projects) can have a substantial impact on an individuals' lifestyle, so much that it may result in negative emotional responses if their participation is withdrawn involuntarily, or as a result of unforeseen circumstances.

7.4. AFFECTIVE ENGAGEMENTS WITH COMMUNITY-BASED CARBON REDUCTION STRATEGIES

Affective engagement reveals the level of emotional response (Mitchell and Carbone, 2011; Wolf and Moser, 2011) towards CBCRS. Consequently, affective engagements with CBCRS reflect the level of emotion, interest and concern towards such projects (Lorenzoni *et al.*, 2007; Whitmarsh and O'Neill, 2011; Wolf and Moser, 2011).

Throughout this thesis, the language used by survey respondents and participants has been strong and emotive. Exploring the emotive language used by participants in this study allows for a closer analysis of affective engagements with CBCRS (Besnier, 1990; Caffi and Janney, 1994; Pang and Lee, 2008). This has provided this research with a strong indication of participants' acceptability of, and participation in, CBCRS. This validates the use of a mixed methods design, and justifies the methodological approach employed. In this study, focus groups have produced valuable subjective, emotional responses and multi-vocality (Morgan, 1997; Bryman, 2008; Newing, 2011). They have captured information relating to "the experiences, observations and opinions of group members" (Massey, 2011: 7), at a precise point in time, and a pivotal point in the development of CBCRS and understanding engagements with addressing climate change at the community level.

Participants used emotive language whilst discussing their engagements with CBCRS. Their statements characterise a multitude of emotional responses, outlined in Sections 7.4.1 to 7.4.3.

7.4.1. Feelings of positivity and engagement

7.4.1.1. Personal feelings of positivity and engagement

Participants suggested that, overall, CBCRS were a positive concept that supported individuals' behavioural responses (commented upon numerous times in Sections 7.2.1 and 7.3.1). Participants specifically discuss their positive emotional responses towards CBCRS:

> "I feel they're a good idea" (BP2),
>
> "There are some negatives but they are a good idea" (BP1),
>
> "It's again, how you sell those positives" (BP3),
>
> "My gut reaction would be is that they're positive, and the positives override the negatives. They're not big. They're more like "ifs and buts" things generally" (BP2),
>
> "They're a good idea to get people involved together but you'd have to have a group of people that the community would trust to come together for weekly meetings. I think the positives would be that it would get the community together, get them talking and then maybe they would socialise within the community" (BP1),
>
> "I'd do it. I'd give it a go because I'd like chickens in the garden. We'd be eco-friendly if we had chickens in that garden" (CP1),
>
> "Stephen, what I suggest you do is head your project "The Good Life"" (CP2),
>
> "I love grow[ing] vegs and all that" (CP1),
>
> "You say that but you haven't grown any!" (CP4),
>
> "But when I do, I love growing it. I have done it more than once" (CP1),
>
> "They're a good thing but I don't know too many. I think we should see some more" (NP2),
>
> "Depending on the outcome really. If you're just going to sit around and talk about things that aren't going to change anything where if it was there to educate people and to give them advice on what they can do to change the environment then that would be more interesting" (NP8).

These statements demonstrate that participants feel positive in two distinctive ways: (1) feelings of positivity towards feeling engaged with action; and (2) feelings of positivity towards engaging with CBCRS. This indicates that participants' affective engagements towards CBCRS mirror their attitudes towards addressing climate change, that action is an essential component of their perspectives (Section 5.5.2).

Within their positive feelings towards engagements with action, and with CBCRS, participants indicate that their positive affective engagements are predicated on a number of influencing factors: (1) acknowledgements that there are negative dimensions, but the positives "definitely outweigh" these; (2) the importance of communicating and "selling the positives" to people (see Section 6.3.4.7); (3) behavioural engagement are important, particularly with respect to participants considering themselves to be "eco-friendly"; (4) positive affective engagements are predicated on awareness of existing schemes, and that there should be "more"; and (5) CBCRS taking a proactive role, particularly with a focus on educating the public.

Despite stating that they feel positively towards CBCRS, participants do acknowledge that there may be some negative dimensions (Section 7.4.3), however, these aspects were considered as "ifs and buts" and therefore believe these to be negligible in comparison to the wider positive outcomes. Once again, reference is made to how CBCRS "sell the positives", indicating that in order to convince people that community initiatives are a good idea, effort is required to communicate positive outcomes could result from direct involvement (Section 6.3.4.7).

CP1 makes reference to their intention to engage with a potential CBCRS behaviourally, so that they could be considered "eco-friendly". With respect to their comments, CP2 suggests that an appropriate title for this research would be "The Good Life", a tongue-in-cheek reference to the late-1970's British sitcom where the main characters attempt to adopt a sustainable, self-sufficient lifestyle. This finding demonstrates two interesting points. Firstly, participants consider that by engaging behaviourally, they would be viewed as "eco-friendly" by others, and consequently feel that a community project is positive thus providing them with a green identity

(Whitmarsh and O'Neill, 2010). However, this finding indicates that although individuals know how to sound like environmentalists, they also are aware of what will give them a green identity, thus being capable in responding in what has become a socially accepted manner (Barr, 2004; Whitmarsh and O'Neill, 2010). Consistent with results in Section 6.2.2.4, some participants may seek to engage with CBCRS for the sake of participation in order to be seen, and labelled, as pro-environmental. Secondly, reference to "The Good Life" almost suggests that there is an idealistic, romanticised view of CBCRS, and participation will automatically lead to the beginning of a sustainable, self-sufficient lifestyle. Although participants in this study acknowledge actions addressing climate change occurs over temporal scales (Section 6.2.2), considerations of participation in CBCRS may contradict individual voluntary behavioural responses.

Additional components of positive affective engagements with CBCRS considered that there should be more of such projects, referencing widespread diffusion of CBCRS similar to what Geels (2002) indicates in the multi-level perspective (Figure 3.2) as a patchwork of regimes, comprising "niches" (CBCRS). This positive perspective demonstrates the level of acceptability for CBCRS, indicating that more projects should be established. However, NP8 argues that CBCRS need to be proactive and educate, and provide advice to, the public with addressing climate change in order to make positive contributions. Reference is made to the level of relevant activity CBCRS could have, and their ability to support the actions undertaken by participants (Sections 6.3.4.4 and 6.3.4.9). It is noted that some projects do spend 90% of their time surviving and only 10% of their time actually delivering the project. To that end, CBCRS need to fully engage with residents to support their participation continuously, and not just in the short term.

Additionally, survey respondents who were not aware of a CBCRS were asked about what they considered to be the advantages of a potential CBCRS being established in their area (Table 7.5).

Table 7.5: Advantages of a community-based carbon reduction strategy				
Advantages	**Blacon**	**Congleton**	**Northwood**	**Total**
Positive social impacts	54 (30.5%)	59 (31.1%)	67 (34.5%)	180 (32%)
Positive environmental AND social impacts	26 (14.7%)	28 (14.7%)	37 (18.9%)	91 (16.2%)
Positive environmental impacts	18 (10.2%)	35 (18.4%)	26 (13.3%)	79 (14%)
Positive economic impacts	22 (12.4%)	13 (6.8%)	16 (8.2%)	51 (9.1%)
Positive social AND economic impacts	8 (4.5%)	1 (0.5%)	3 (1.5%)	12 (2.1%)
Positive environmental, social AND economic impacts	0 (0%)	1 (0.5)	1 (0.5%)	2 (0.4%)
Positive environmental AND economic impacts	0 (0%)	0 (0%)	1 (0.5%)	1 (0.2%)
No answer	49 (27.7%)	53 (27.9%)	45 (23%)	147 (26.1%)
Total	*n*=177 (100%)	*n*=190 (100%)	*n*=196 (100%)	*n*=563 (100%)
Note: total number of respondents differs from overall total of respondents due to questionnaire design and flow. This question applies to residents who are not aware of a community-based sustainability initiative in their area.				

73.9% identified a positive dimension of a CBCRS, whereas 147 respondents (26.1%) did not. Response categories were assigned to themes based on the three pillars of sustainable development (Rogers *et al.*, 2008). The distribution of responses between themes indicates that residents expect a CBCRS to improve social sustainability (*n*=180, 32%) including community engagement and increased awareness of people's actions that impact on the environment, and exemplified in the following quotes:

> "Would promote a close-knit community and bring people together for a good cause" (BR54)
>
> "People have a chance to contribute their skills to the community cause" (CR120)
>
> "Enhances community involvement and participation" (NR40)

What CR120 identifies is that CBCRS can take advantage of residents' skills, which defines a grassroots sustainability project whereby the members of a community take charge of, and fully participate in, the initiative using their skills and experience (Arnstein, 1969; Seyfang, 2010). These findings suggest that CBCRS can act as a forum and platform for residents to state their own needs, values and what they feel should be done to address climate change, an aspect of community projects exemplified by the AHGCNP.

Respondents identified multiple advantages of a CBCRS, which crossed the boundaries of the pillars of sustainable development, indicative of the second most common response related to positive environmental and social impacts (*n*=91, 16.2%). For example, BR77 states that a positive dimension of such a project relates to the community "…focusing on the environment and working together". BR77 identifies how a CBCRS would improve relations between community members, strengthen community ties, building a sense of community. Numerous respondents exemplify this result by stating: "[A CBCRS] could help create a community spirit". Respondents stated that positive environmental impacts (*n*=79, 14%) may result from a CBCRS, including reducing carbon emissions and improved environmental quality. Positive economic impacts (*n*=51, 9.1%) including saving money on energy bills and advantages for local businesses were also mentioned. Respondents stated that: "[A CBCRS] Would highlight other aspects of the community that could take advantage of this business opportunity" (CR69) and "Could create jobs in local areas" (NR121).

Previous research relating to community energy projects also identifies that respondents often highlight positive social and economic impacts (Rogers *et al.*, 2008; Warren and McFadyen, 2010). While the majority of respondents identified positive outcomes of a CBCRS to impact on the local area, closer analysis of the results indicate that respondents consider a CBCRS to have benefits that were also positive with respect to wider issues of improving environmental quality and reducing carbon emissions. This indicates that, to some extent, residents are aware

of the relationship between local carbon reduction practices and global sustainability issues (Rogers *et al.*, 2008).

Box 7.5: Participants' views towards feeling engaged about addressing climate change

Despite discussing their perspectives towards addressing climate change and sustainable living, participants in this study indicated that they wanted to add additional comments. Moreover, participants provided their views towards feeling engaged and ability to articulate their perspectives in a focus group forum, indicating that they wished to be engaged by those implementing such practices:

> "Another thing…" (CP2),
> "Oooh, we'll be here all day" (CP3),
> "I mean, how often do we have the platform for this discussion? You know, it's only now and again that you're going to sit and reflect and think about what you personally do and individually do which I probably wouldn't have done if I hadn't joined in a focus group today" (NP2),
> "That's right!" (NP3),
> "It's getting people to have this action and have these discussions and I think that's the local council's initiatives and they should be trying to get some more focus groups and awareness raising really" (NP2),
> "I haven't finished talking yet [laughs]. Ask me another one, go on!" (NP1),
> "Now look what you've started" (NP2).

Participants stated that the focus group allowed individuals to reflect upon and discuss environmental issues such as addressing climate change and CBCRS within a constructive forum that allows for genuine engagement and views to be articulated and heard. These comments illustrate that participants have much to say about addressing climate change at the community level and, in turn, want to be heard. By discussing their perspectives and taking on board suggestions from local residents, regular forums would allow members of a community to state their own needs and values whilst permitting them to participate in decisions that directly influence the direction of CBCRS (Arnstein, 1969; Wiesenfeld and Sanchez, 2002; Mulugeeta *et al.*, 2010; Mannarini, 2011). This will help to bridge the public-policy-practice divide.

Furthermore, participants asked multiple questions themselves within focus group discussions. Participants felt that they would feel reassured that their carbon reduction practices were having an impact if they could be provided with tailored information:

> "Is this just a drop in the ocean and is it making a difference? Who can give me the evidence and the research that what we are doing is of any consequence that is making any impact for the long term… for the next generation" (NP2).

Once again, participants identify that the role of a CBCRS could provide answers to questions, queries or provide reassurance that their activities are having a positive impact to address climate change.

7.4.1.2. Other people's feelings towards engagement

Participants also made reference to how other people may feel positively towards engaging with CBCRS:

> "It would encourage thinking people, but there are certain members of society that couldn't care less" (CP2),
>
> "If there was money involved, they'd get involved" (CP1),
>
> "They'd prick their ears up then" (CP3),
>
> "That's the problem, you shouldn't have to [participate for money], you should do it automatically. There should be a system involved, created… where it's just a matter of course and it happens… for me it shouldn't be a choice" (CP5),

Participants considered that whilst CBCRS would encourage sustainable lifestyles, it would only cause others to feel positively towards community projects because there was the potential for financial gain or reward (Brandon and Lewis, 1999; Whitmarsh, 2009b). Participants, are in some ways, critical towards those who would only consider participation for financial benefits indicating that those who would consider involvement for more genuine reasons are labelled as "thinking people". This comment indicates a level of judgement and condescension on behalf of those who consider participation to be positive, and others who do not think about participation aside from the financial dimensions are not rational "thinking people" and are, in some respects, selfish for not contemplating other motivations or involvement. This finding in itself suggests that there are some who have differing attitudes towards those who undertake action for intent purposes (Whitmarsh, 2009b). Additionally, this finding suggests that participants consider those individuals who are not concerned about, or engaged with, addressing climate change have differing motivations towards participation in CBCRS. Whilst financial incentives do not sustain behavioural responses or participation in CBRCS (Abrahamse *et al.*, 2005), reference to other positive outcomes may encourage such individuals to consider involvement (Thogersen, 2013).

CP5 is critical about others participating for financial gain or reward, and believes that undertaking behavioural responses and participating in CBCRS should happen as a matter of course. Reference is made to removing the choice of nonparticipation. Removing the choice of purchasing unsustainable products and nonparticipation, consequently forcing people to act pro-environmentally is a notion that participants believe would enable and support actions addressing climate change. This is referred to in Section 5.5.4 and 6.2.2.3. This approach towards addressing climate change would almost certainly be met with reluctance to implement, and be met with a severe public backlash and resistance (Ockwell *et al.*, 2009), before people potentially accept such changes, after (substantial) time has elapsed.

7.4.2. Feelings of indifference and ambivalence

7.4.2.1. Indifference and ambivalence amongst participants

Other participants felt indifferent and ambivalent towards addressing climate change at the community level:

> "I don't know really. I'm not sure" (NP7),
>
> "Indifference to be honest" (NP5),
>
> "I don't know, you'd have to see what's on offer… to help the environment" (NP6),
>
> "I say indifference but if it was something like litter picking, I don't like seeing litter everywhere… I might be tempted to maybe go along to one of those one morning. If it was sort of group meetings… discussing sustainably, there's no way I'd want to go" (NP5),

The above conversational output demonstrates that some participants were indifferent and ambivalent towards participating in CBCRS. This indifference towards participation manifested itself in the minds of participants as a result of: (1) a lack of awareness and understanding of the activities undertaken by CBCRS; or (2) the commonalities and differences between the activities of CBCRS and its outcomes with the concerns of residents (and prospective participants).

In some respects, indifference and ambivalence was predicated upon a lack of understanding relating to what activities would be undertaken, before considering participation. In other cases, participants would only consider participation if activities married with their respective environmental concerns. In particular, NP5 suggests that they would take a proactive approach to engaging with a CBCRS if it focused on litter picking because they "do not like" litter, but would be averse to attending meetings as that would not interest them. These findings demonstrate that not only do affective engagements influence potential behavioural engagement, it also influences participation in particular activities in CBCRS, mainly resulting from individuals' environmental concerns (Section 5.2).

Whilst CBCRS should embrace participants' choices in participating in particular activities, efforts should be made to facilitate interest in activities that could enable participants to become a central part of the decision-making process. Some individuals might not want to participate by choice. CBCRS should be prepared for this. The ladder of citizen participation does not account for nonparticipation (Arnstein, 1969). However, the act of nonparticipation, whether through apathy or ambivalence may mask the unacceptability of (participating in) CBCRS and indicate a level of resistance towards addressing climate change. Indifference, apathy and ambivalence can be related to Foucauldian concepts of power and resistance, where resistance to participate may take multiple forms: overt or covert, conscious or unconscious acts (Medina, 2011). Resistance towards CBCRS indicates individuals' deliberate stance and desire for transformation (Olafson and Field, 2003; Nocon, 2005). The challenge for CBCRS is to involve individuals who may be resistant, in an open forum for dialogue to seek improvements to the nature of community-based carbon reduction.

7.4.2.2. Indifference and ambivalence amongst others

Participants readily identified that many individuals and residents within their own community would feel indifferent or ambivalent towards CBCRS:

> "I don't think many people would be open to a scheme that would take a lot of time and effort. It needs to be introduced, not gingerly, but needs to be done very slowly so people can get used to the idea of doing something" (NP4),
>
> "Sneak[ing] in by the back door as it were with the lightbulbs. Had you… the choice between a standard light bulb and energy efficient ones, then an energy efficient one being more expensive… people wouldn't have chosen that one. But people like us maybe would have. If there were still a choice, people chose the cheaper option. You're not wrong with gingerly because things have to be introduced… gently… to get people… involved" (NP1),
>
> "People need to get used to the idea of how can their community help the environment out and then eventually, because that would take a lot of time, it would need to build up" (NP4),
>
> "We need a Christian spirit for giving to the community for the environment" (NP2).

Participants felt that the introduction of CBCRS was essential in countering indifference and ambivalence towards addressing climate change amongst others. Participants argue that the introduction of a project, would influence the acceptability of CBCRS amongst others, and should be gentle for residents to become accustomed to the idea of participation. Only after residents have become accustomed to the concept of a CBCRS operating in their community along with initial involvement, would the opportunity to sustain participation by building upon the projects' activities. This finding suggests that participants are aware of the need for CBCRS to be acceptable to residents, and that a slow introduction and gradual build-up of activity would sustain participation. This comment may highlight a path towards sustaining participation in CBCRS that directly addresses the challenge raised by Alexander *et al.* (2007), essentially indicating that encouraging those who currently take no action to undertake small measures, and increase behavioural responses after a period of time (Evans *et al.*, 2013; Thogersen, 2013).

It is noted that a gradual introduction of CBCRS would be advantageous to influence public acceptability towards community projects. Reference is made to choices

between sustainable alternatives and choice of purchasing unsustainable cheap options and the types of people who would take which option. Consistent with findings from 7.4.3.2, participants indicate that engaged individuals (Section 5.5.2) were more likely to act sustainably. Although this relationship is exemplified clearly in Box 6.2, participants are aware of individuals who hold a more apathetic attitude are less likely to take action (Section 6.2.1). This point is also indicative of findings in Section 7.4.2.1; individuals who are apathetic or make a conscious or unconscious choice of nonparticipation may seek to illustrate their resistance towards CBCRS or, more widely, addressing climate change (Olafson and Field, 2003; Nocon, 2005; Medina, 2011).

More broadly, suggestions that a "Christian spirit" aimed at environmental protection are required. NP2 states that the emphasis of this spirit should be on the community contributing to environmental protection and, by extension, addressing climate change. This finding could relate to a specific aspect of CBCRS that indicate "ground rules" (Figure 3.5) should be enacted to encourage a positive arena, underpinned by strong ethical perspectives. NP2's suggestion that an ethical dimension to addressing climate change may resonate strongly with residents that may otherwise not engage with CBCRS, and seek to involve those who in other ways would not feel strongly towards a community project.

7.4.3. Feelings of concern, frustration, anger and disengagement

7.4.3.1. Feelings of concern

Although many participants felt positively towards CBCRS overall, participants did identify they felt concerned about particular dimensions of establishing a community project, and identified potential negative aspects that may occur:

> "The disadvantage is that… people could take advantage… and they might, say if it's an allotment, take from the allotment but not give back to it" (BP1),
>
> "You might get a few people who try to do it for the benefits and not do anything" (BP2),

> "I suppose it matters whether the community gets on with each other. There will be certain people that won't [participate] but you could create maybe more animosity… it could be a bit difficult" (BP3),
>
> "Do you think that's because some people try to take charge?" (I),
>
> "There's always… people who try to take charge. If you've got everyone who thinks they're a leader then more harm could be done than actual benefits" (BP3).

This conversation details that some participants have genuine concerns surrounding the organisation and methods of participation by others in CBCRS. Specifically, participants considered that those only participating for rewards would not contribute as equally as others, and how some members may attempt to take charge of the project. These remarks were made in the context that other residents could have on participants and the scheme itself. It was noted that these concerns could lead to additional impacts; such as some participants feeling that they are acting sustainably for others, resulting in people 'piggybacking' upon their level of engagement (Ockwell *et al.*, 2009), and people taking charge could lead to animosity between residents. CBCRS are commonly referred to as having multiple social advantages, including community cohesion (Alexander *et al.*, 2007). Yet participants acknowledge that in some cases a project could lead to negative social impacts. This is an important finding, particularly as CBCRS have been presented positively, both within academic literature (Alexander *et al.*, 2007) and from the perspective of participants.

Noting these negative elements illustrates a new dimension to CBCRS that has not been recorded previously and could result in serious implications for public engagement and CBCRS more widely if such projects are not aware of, or able to, overcome such challenges and negativities.

A CBCRS is defined as a network of organisations and residents cooperate and act together to address climate change. Should some individuals seek to take charge, the supportive and constructive nature of CBCRS diminishes thus having implications on

those participating, or wish to become involved. With reference to Section 7.2.2.2, participants identify that they believe that those who lead the project should know what to do to lead a CBCRS in a successful direction. Therefore, participants identify that if a number of individuals seek to take charge, more harm could be done than actual benefits, and reference is made to the successful outcomes that could result from CBCRS if organised and led effectively. Previous studies show that integrating residents within a multi-agency response is possible and can be effective, but requires consideration of implementing decision-making processes (Arnstein, 1969; Alexander *et al.*, 2007; Rogers *et al.*, 2008; Mannarini, 2011).

Survey respondents also suggested aspects of CBCRS that they were concerned about (Table 7.6).

Table 7.6: Concerns of a community-based carbon reduction strategy being established

Highlighted concerns	Blacon	Congleton	Northwood	Total
None	122 (68.9%)	148 (75.8%)	132 (67.3%)	398 (70.7%)
Apathy	12 (6.8%)	27 (14.2%)	14 (7.1%)	53 (9.4%)
Costs/funding	10 (5.6%)	1 (0.5%)	29 (14.8%)	40 (7.1%)
Pressure to participate	9 (5.1%)	8 (4.2%)	5 (2.6%)	22 (3.9%)
Issues related to participation and others apathy and/or (non)participation	12 (5.8%)	2 (1.1%)	7 (3.6%)	21 (3.8%)
Organisation	4 (2.3%)	4 (2.1%)	6 (2.9%)	14 (2.5%)
Lack of perceived benefits	8 (4.5%)	2 (1.1%)	3 (1.5%)	13 (2.3%)
Total	*n*=177 (100%)	*n*=190 (100%)	*n*=196 (100%)	*n*=563 (100%)

Note: total number of respondents differs from overall total of respondents due to questionnaire design and flow. This question applies to residents who are not aware of a community-based sustainability initiative in their area.

70.7% of respondents (*n*=398) suggested that that they had no immediate concerns about a CBCRS being established in their local community. This result indicates that residents in all three communities do not reject or resist the notion of CBCRS. This is

an important finding, demonstrating that the majority of respondents are accepting of CBCRS, and suggest no immediate barriers to action.

Concerns that were raised about a project being established related to apathy (*n*=53, 9.4%); project funding (*n*=40, 7.1%); and pressure from activists (*n*=22, 3.9%). Along with identifying their own apathy towards addressing climate change as part of a formal project, some respondents identified issues related to others (non)participation and/or apathy (*n*=21, 3.8%). This result is consistent with findings in Section 6.3.4.8 indicating that collective action is considered an enabler to sustainable living, and having substantially more of an impact on emission reductions (Alexander *et al.*, 2007). As suggested in Section 7.4.2, residents' apathy may be a result of resistance towards (participating in) CBCRS, and addressing climate change more generally.

A minority of respondents identified that the organisation of CBCRS was a concern. Rogers *et al.* (2008) note that it is how community projects are developed and managed, more than what is developed, which causes opposition. This is explored in Section 7.2.2.2. However, these responses illustrate that residents did not view the development and management of CBCRS as a major concern; instead apathy and pressure to participate in a potential project were identified more so. Respondents could be suggesting that volunteers aiming to gauge support for, and promoting engagement with, CBCRS are overbearing, and consequently intimidating and pressurising. Although viewed as a strength of CBCRS (Seyfang, 2010), this could lead to resistance from residents.

7.4.3.2. Feelings of frustration, anger and disengagement

Alongside feelings of concern, participants felt angry and disengaged with wider dimensions of addressing climate change and sustainability, which they argue would "put people off" taking behavioural responses:

> "I've noticed that in our town centre we used to have bike lanes. They've all been taken away… there used to be a green tarmacked area. Why has it been

taken up? It was an initiative that tried to encourage people to come in to an area on bikes, and pedestrianize areas. I don't get that" (NP2),

"It puts people off cycling in" (NP4),

"We've put the initiatives in and stamped "look at us, we're eco-friendly and we're trying to organise cycling around the city" and then, suddenly they're taken away. Why would you take something that's encouraging people to be… eco-friendly away? How much are we actually told and how much are we actually consulted with?" (NP2).

Participants demonstrate that in some respects they feel disengaged and, subsequently, angry and frustrated as a result of actions taken that act against sustainable living. Observable in the text, participants appear to be strongly questioning the issue, the tone of voice participants used to discuss this topic were frustration, confusion and anger, particularly directed towards schemes that encourage people to "be more green" have been "taken away".

Although participants do not feel anger and frustration towards the concept of CBCRS, they feel this way towards issues that work against mainstreaming sustainable development. This, not only, indicates support and acceptance of addressing climate change at the community level, but also demonstrates that removing support structures leads to further negative emotional and behavioural responses, that inhibits progress. Consequently, NP2 describes a "double standard"; implementing measures and then removing them is not only noticed by participants, but resonates strongly. This leads NP2 to question levels of consultation. NP2 does not further develop this point, but suggests consultation and contributing towards decisions that will influence the voluntary actions undertaken by individuals is important for participants' affective, and behavioural, engagement with addressing climate change. Subsequently, this finding demonstrates that participants do wish for a higher level of citizen participation, above the ranks of "consultation" (Arnstein, 1969).

Survey respondents, who were not aware of a project, suggested what they considered to be the negative dimensions of a CBCRS being established in their area (Table 7.7).

Table 7.7: Disadvantages of a community-based carbon reduction strategy

Disadvantages	Blacon	Congleton	Northwood	Total
None	123 (69.5%)	135 (71.1%)	142 (72.4%)	400 (71%)
Apathy	11 (6.2%)	7 (3.7%)	11 (5.6%)	29 (5.2%)
Waste of time/time consuming	9 (5.1%)	11 (5.8%)	6 (3.1%)	26 (4.6%)
No perceived benefits	5 (2.3%)	12 (6.1%)	9 (4.4%)	26 (4.6%)
Not a priority/detracts from "real" priorities	4 (2.3%)	13 (6.8%)	1 (0.5%)	18 (3.2%)
Costs/funding	8 (4.5%)	2 (1.1%)	8 (4.1%)	18 (3.2%)
Other people's (non)participation	7 (4%)	2 (1.1%)	7 (3.6%)	16 (2.8%)
Effort/difficulty with engaging people	7 (3.9%)	4 (2.2%)	9 (4.6%)	20 (3.6%)
Pressure from activists	3 (1.7%)	4 (2.1%)	3 (1.5%)	10 (1.8%)
Total	*n*=177 (100%)	*n*=190 (100%)	*n*=196 (100%)	*n*=563 (100%)

Note: total number of respondents differs from overall total of respondents due to questionnaire design and flow. This question applies to residents who are not aware of a community-based sustainability initiative in their area.

Compared with the positive dimensions (Section 7.4.1.1), respondents did not identify as many negative dimensions of CBCRS being implemented in their community (*n*=400, 71%). This is an important finding, indicating that the majority do not perceive there to be any negativities associated with CBCRS. This result could also indicate the level of acceptability of CBCRS, with 71% of respondents not associating any negativity to such initiatives.

With respect to the reported negative dimensions that respondents did identify, residents indicated that apathy (*n*=29, 5.2%); (participation in) a project would be time consuming (*n*=27, 4.6%); and CBCRS having no (perceived) benefits (*n*=26, 4.6%). These responses are consistent with findings from surveys relating to evaluations of, and participation in, other environmental initiatives attempting to change behaviour (Vining and Ebreo, 1990; Oskamp *et al.*, 1991; Perrin and Barton,

2001). Comments related to apathy however related to the indifference and unwillingness of others rather than respondents' own lack of concern. These responses are consistent with focus group findings in Section 6.3.2.1.

Respondents mentioned that such projects were not a priority and/or stated that it detracted from "real" priorities affecting the community. 6.8% of Congleton respondents stated that a community project was "Not a priority for many people to properly think about it" (CR92) and that it "Would be a distraction from real tangible priorities" (CR96). These comments reflect Giddens' Paradox; because the impacts of climate change are not tangible in everyday life, people will take a relaxed approach to addressing climate change (Giddens, 2009). This result reveals that established CBCRS, and by extension formalised action towards addressing climate change, are not important in the context of other issues (Section 5.2.1.1), to a small minority of residents.

Respondents also cited that other peoples (non)participation to a project and the difficulty of engaging others was also considered to be a disadvantage. These responses refer to the "I will if you will" phenomenon (Whitmarsh, 2009b). Respondents argued that it would be difficult to achieve meaningful emissions reductions without a substantial number of residents supporting and participating in CBCRS. A small minority of respondents also argued that pressure from activists (*n*=10, 1.8%) was another disadvantage of a CBCRS, particularly as the strength of such projects is considered to be the number of enthusiastic volunteers and activists aiming to engage others in carbon reduction practices (Seyfang, 2010).

7.5. CHAPTER SUMMARY: EVALUATING THE ACCEPTABILITY OF, AND PARTICIPATION IN, COMMUNITY-BASED CARBON REDUCTION STRATEGIES

This chapter explored public engagements with CBCRS. Specifically, this chapter explored participants' cognitive, affective and behavioural engagements with community projects that aim to facilitate low-carbon, sustainable lifestyles. From participants statements, it is clear that, overall, individuals accept the notion of CBCRS being established within their communities, but acknowledge that they feel

that they do not know a sufficient amount about their aims and activities which may act as a barrier to participation, along with identifying a number of concerns that participants feel should be addressed.

Box 7.6: Summarising public cognitive engagements with community-based carbon reduction strategies

Awareness of CBCRS

Whist it is widely reported that CBCRS result in numerous environmental, economic and social advantages (Alexander *et al.*, 2007; Middlemiss and Parrish, 2010; Mulugeeta *et al.*, 2010), participants in this study did not identify a formal project. This is surprising, particularly as focus groups took place in two communities where a formal project does exist (Sustainable Blacon and Congleton Sustainability Group). Yet, 56 respondents (9%) were aware of a CBCRS in their community. Despite this, participants did identify components of a CBCRS (i.e. community allotments, food banks, community recycling, and grants for wall/loft insulation. What is important here is that participants identified that CBCRS would support their voluntary actions that address climate change, yet are not aware of schemes that are taking place in their own community. This finding demonstrates a very low level of awareness of CBCRS; insufficient effort by Sustainable Blacon and Congleton Sustainability Group to raise awareness of the projects in the communities of participants; and a lack of visibility and proactivity amongst existing participants in these schemes.

Whilst this low level of awareness may stem from the unsystematic establishment of CBCRS (Rogers *et al.*, 2008; Peters *et al.*, 2010), this presents a challenge to meaningfully engage individuals in addressing climate change at the community level, where a diverse range of (communication and intervention) methods are required to engage these individuals (Abrahamse *et al.*, 2005; O'Neill and Boykoff, 2011; Todhunter, 2011), who are willing to participate. Yet these individuals are unable to actively participate if they are unaware of a project taking action in their own community. This, therefore, creates a circle of perpetuating unawareness and nonparticipation, the two concepts inherently linked: participants are unable to participate because they are unaware of a project's existence; and participants are not aware because others are not participating, thus making them aware of a CBCRS.

Other participants were unaware of (components of) projects until others confirmed their existence. This prompt acted as an "awareness trigger", where participants recall their awareness about CBCRS. This finding suggests that community carbon reduction is an issue that is firmly situated in the "back of the mind" (Giddens, 2009) and is not an issue located at the forefront of everyday lives for participants, potentially as a result of CBCRS not being a widespread mode of alternative, sustainable living that is highly publicised or generating the interest of individuals.

Understandings of CBCRS

Understanding of CBCRS was predicated on four main dimensions: (1) collective action, responsibility and others (non)participation; (2) organisational involvement with CBCRS; (3) sustaining interest to sustain participation and behavioural engagement; and (4) activating the link between awareness and participation.

Participants identified that collective action and participation from others to be a key dimension of a CBCRS, without which it would be difficult to achieve sustainable living. Participants thus noted that there would be "no point" in establishing a project if there was not substantial interest and active participation in it. Participants specifically made reference to those who hold "apathetic" and "disengaged" attitudes towards addressing climate change would not be willing to participate, suggesting a link between attitudes towards addressing climate change and participation in CBCRS.

Organisational involvement in CBCRS was considered to be an important dimension of cognitive engagements, particularly concerning the form and function of community projects, which would be integral to the success. Despite questions raised, uncertainty stated and differences of opinions discussed, participants identified that individuals within the community or LA could become involved, and lead, a CBCRS, though this would depend on the type of community discussed (urban or rural communities). Suggestions of an open, democratic and participatory approach to CBCRS would be the most acceptable organisational form of project to local residents. This approach would also help to engender genuine debate and citizen participation about whether and how to address climate change within their local community (Arnstein, 1969; Weisenfeld and Sanchez, 2002; Seyfang and Smith, 2007; Peters *et al.*, 2010; Warren and McFadyen, 2010). This, in turn, may be an opportunity for CBCRS to engage the public with addressing climate change at the community level highlighting the open and democratic nature of such projects.

Sustaining interest in CBCRS to sustain participation was considered to be essential for the long-term success of a community project, without which sustainable living and addressing climate change at the community level cannot be achieved. These findings reflect those by Alexander *et al.* (2007), commenting that the challenge remains how to transition from the initial excitement of involvement to sustained participation. Participants highlight that participation in CBCRS is closely related to individuals' affective engagements, and consequently their values (Corner *et al.*, 2014) and identity (Whitmarsh and O'Neill, 2010). Additionally, participants make reference to the barriers they are aware of that inhibit participation in CBCRS highlighted in Section 7.3.4. Specifically, participants indicate that time was considered a major barrier to engaging with, and participating in, CBCRS, suggesting that participants believe participation in CBCRS to be a formal, static, time-consuming activity that should be done at fixed points in time. This refers to comments that because individuals live in a "time pressured society", incorporating action to address climate change amongst other competing priorities is difficult.

Identified above, and mentioned frequently, that because participants are not aware of a CBCRS and their activities, attempts to garner support for, and participation in, community projects would prove challenging to engage residents with addressing

climate change at the community level. A diverse range of methods to improve awareness of CBCRS, to sustain interest and participation (thus influencing all spheres of engagement) should be employed to address the challenge that Alexander *et al.* (2007) identify; transitioning initial excitement of a project to sustained participation (Abrahamse *et al.*, 2005; O'Neill and Boykoff, 2011). Additionally, participants also identified that awareness raising should not stop once a project is established, as there is a need to (re)engage participants and nonparticipants alike through stimulating interest and enthusiasm amongst local actors.

Behavioural engagements with CBCRS related to an identification of what methods of participation individuals would be willing to undertake in such a project; identifying and maximising the enablers of behavioural engagement, and identifying and minimising the barriers; and discussing previous behavioural engagements with CBCRS. A summary of the main findings is highlighted in Box 7.7.

Box 7.7: Summarising public behavioural engagements with community-based carbon reduction strategies

Methods of participation

Overall, the majority of participants suggested that they would be willing to participate in a CBCRS, and identified a number of methods through which they could participate in community projects. These methods ranged attendance to meetings; engaging children in local activities; and generating publicity and awareness amongst residents to engage them with a project. These identified methods of participation are consistent with previous findings (Rogers *et al.*, 2008) yet may result from a gap in cognitive engagements with CBCRS, specifically awareness and understanding of such schemes.

No single participant identified that they would like to lead the project. This suggests that they identify other organisations and individuals who are more aware of the nature, format and requirements for success of a project to take the lead, as identified in Section 7.2.2.2. Additionally, concerns were raised within this section and Section 7.4.3 that singular individuals attempting to take control of a project was considered a negative aspect. The methods of participation relate closely to existing skills that participants possess, and identify that engaging in ways that CBCRS can create an environment where individuals feel, and do, have the power, resources and ability to influence others and make real contributions to addressing climate change, thus responding to the needs of local residents are preferred ways of behavioural engagement. Evaluating these methods, survey respondents identified methods that were not consistent with the higher rungs of Arnstein's (1969) ladder of citizen participation where residents are in control of a CBCRS, yet participants methods are indicative of "delegated power", where citizens obtain the majority of

decision-making processes (Alexander *et al.*, 2007; Rogers *et al.*, 2008).

Enablers of behavioural engagement

Participants identified four enablers that should be maximised to encourage individuals to engage with CBCRS: (1) awareness raising and education; (2) tailored advice and support; (3) financial incentives; and (4) promotion and advertising sustainable living and community projects.

These factors identify that awareness about CBCRS and their activities should be a continuous thread throughout the lifetime of a community project, and integrating CBCRS as a case study of alternative, sustainable living would promote addressing climate change at the community level to schoolchildren. Despite previous research suggesting that awareness raising will not modify behaviour alone (Barr and Gilg, 2005; Verplanken, 2011), this finding supports the existence of an "information vacuum" that may result in nonparticipation because of a lack of understanding and cognitive engagement with CBCRS. Addressing this vacuum may lead to increased participation rates amongst residents. Without doing so, a lack of understanding, apathy and behavioural engagement with CBCRS may develop, presenting substantial challenges for CBCRS attempting to engage the public with addressing climate change at the community level. This finding also substantiates perspectives that providing tailored advice and feedback would also encourage participation and modify behavioural responses (Abrahamse *et al.*, 2007; Verplanken, 2011).

Related to this, participants identify promotion and advertising engagement with CBCRS and addressing climate change generally through local, trusted outlets (Whitmarsh, 2009a), would be a positive method of engaging the interest and awareness of individuals. Yet, participants acknowledged that this may not alter pre-existing attitudes to addressing climate change or towards participation in CBCRS (Nickersen, 1998). Mass media campaigns akin to "Are You Doing Your Bit?" were also suggested as means to engage the public, yet previous research demonstrates that these methods are largely ineffective in promoting understanding, engagement with the issue or changing behaviour (Lofstedt, 1995; Hinchliffe, 1996). Financial measures were also suggested, indicating that participants are aware that individuals take action for tangible, financial reasons rather than out of environmental concerns (Brandon and Lewis, 1999; Stern, 2000; Whitmarsh, 2009b), yet these measures do not sustain behavioural responses (Abrahamse *et al.*, 2005). One possible method of overcoming this challenge may be to ensure individuals think of the environmental benefits of sustainable actions, which may lead to spillover effects into other behaviours (Evans *et al.*, 2013; Thogersen, 2013).

Barriers to behavioural engagement

Participants identified three barriers that should be minimised to increase individuals' engagements with CBCRS, but acknowledge that some of these barriers are beyond the control of community projects. They are: (1) the relative importance of addressing climate change amongst the public; (2) integrating addressing climate change at the community level into "time pressured" lifestyles; and (3) (un)awareness of outcomes of action and participation in CBCRS.

Participants identified that national priorities of politics and the economy will take

precedence over environmental issues and addressing climate change, consequently pushing CBCRS to the "back of the mind", as the issues are not given sufficient attention and therefore not considered a priority issue or perceived to be a direct personal risk (Giddens, 2009; Upham *et al.*, 2009; Ockwell *et al.*, 2009; Spence *et al.*, 2012; Devine-Wright, 2013). Moreover, integrating participation in CBCRS was considered to be difficult, particularly in the context of a "time pressured society". Previous research highlights that assertions reflecting "time consuming" and "difficult" are often stated when referring to participation in community projects (Werner and Makela, 1998; Perrin and Barton, 2001). This presents a challenge for CBCRS to ensure potential participants that involvement is not arduous and complicated, but simple, attractive, interesting, supporting, and focused on more than one activity.

Participants consider that a general unawareness of CBCRS, their activities and the positive outcomes of participation are barriers to engagement. This demonstrates that while action is taken primarily for financial reasons (Brandon and Lewis, 1999), participants fail to make links between the positive outcomes of participation and behavioural engagements. This may be a result of the lack of awareness and understanding of CBCRS (Box 7.5).

Previous behavioural engagements

It was noted that one participant had previous experience of engaging with a community-based sustainability initiative previously. Reasons for engagement were strongly linked to concern about environmental issues and strong intentions to act, followed by being enabled to do so by others. These factors correlate to the measures that enable and challenge sustainable living and engagement with CBCRS. These factors are demonstrated diagrammatically in Figure 7.1. Moreover, when BP2 left the project (to move to university), they experienced a level of "disconnection" with the project they had been involved in. This demonstrates the interrelationships between all three spheres of engagement (Whitmarsh and O'Neill, 2011), and behavioural engagement can indeed precede and alter cognitive and affective engagements with CBCRS.

Affective engagements towards CBCRS touched upon a multitude of articulated emotional responses, ranging from feelings of positivity and engagement, through feelings of indifference and ambivalence, to feelings of negativity, concern and disengagement. Participants not only articulated their own emotional responses towards CBCRS, but also identified and evaluated other people's emotional responses. Participants' cognitive, affective and behavioural engagements with CBCRS identified that individuals consider the notion of a project established in their community to be broadly positive, yet identify concerns over its (potential) implementation; efforts to sustain interest; and other people's (non)participation.

Box 7.8 summarises the main findings concerning affective engagements and public acceptability towards CBCRS.

Box 7.8: Summarising public affective engagements with, and acceptability towards, community-based carbon reduction strategies

Feelings of positivity and engagement

Overall, participants felt positively towards the notion of CBCRS being established in their communities, and these feelings of positivity are predicated on a number of influencing factors: (1) acknowledgements that there are negative dimensions, but the positives "definitely outweigh" these; (2) the importance of communicating and "selling the positives" to people (Section 7.3.4.7); (3) behavioural engagement are important, particularly with respect to participants considering themselves to be "eco-friendly"; (4) positive affective engagements are predicated on awareness of existing schemes, and that there should be "more"; and (5) CBCRS taking a proactive role, particularly with a focus on educating the public. Participants acknowledged that although there may be some negative dimensions, these are nothing more than "ifs and buts", negligible in comparison to the positive dimensions. Furthermore, suggestions that the title of this research project be called "The Good Life" demonstrate an almost romanticised view of sustainable living. These factors therefore indicate positive affective engagements with, and strong support (acceptability) for CBCRS.

Feelings of indifference and ambivalence

Yet some participants were indifferent and ambivalent towards CBCRS. The responses by participants suggest a level of indifference and ambivalence that has manifested as a result of a lack of awareness and understanding of the activities undertaken by CBCRS. However, these participants suggested that although indifferent, they would still be willing to engage with particular aspects of CBCRS that are aligned with their own environmental concerns. This finding suggests that environmental concerns may strongly influence engagement with particular dimensions of CBCRS.

Feelings of frustration, anger, concern and disengagement

Some participants identified that they held concerns towards CBCRS, particularly the identification of an overall leader of the project. This was considered to be a negative response, as "more harm could be done than actual benefits". This reinforces responses in Section 7.2.2.2 that those in charge should know what they are doing to bring about successful impacts of CBCRS. Other people's (non)participation was frequently mentioned during this research, and indicated as a concern about others' disengagement. However, some participants may not wish to behaviourally engage with CBCRS. CBCRS should be prepared for this. The ladder of citizen participation does not account for nonparticipation (Arnstein, 1969). However, the act of nonparticipation, whether through apathy or ambivalence may mask the unacceptability of (participating in) CBCRS and indicate a level of resistance towards addressing climate change. Indifference, apathy and ambivalence can be

related to Foucauldian concepts of power and resistance (Medina, 2011).

Although not specifically related to CBCRS, participants acknowledged that changes made to local areas without consulting local residents leads to a public backlash, anger and disengagement with democratic participatory approaches. These feelings resonated strongly with participants and should be viewed as an indicator of the impacts when consultation does not occur. Consequently, this finding demonstrates that participants do wish for a higher level of citizen participation, above the ranks of "consultation" (Arnstein, 1969), indicating their acceptability and intention to participate in community carbon reduction and decision-making processes (Alexander *et al.*, 2007; Rogers *et al.*, 2008).

Consequently, it is clear that public (cognitive, affective and behavioural) engagements influence public acceptability of CBCRS that, in turn, influences intentions to participate in community-based sustainability initiatives. This acceptability is mediated through levels of CBCRS; the efforts and ability of CBCRS activating public participation, increasing awareness, and facilitating low-carbon living; and levels of awareness and understanding of community projects. Yet, it is also clear that public engagements towards CBCRS are also influenced by the relative importance, and prioritisation, of (addressing) climate change, in the context of broader personal, social, economic and environmental issues; attitudes towards addressing climate change; and willingness to take, and currently taken, behavioural responses to address climate change. In addition to these underpinning influences of public engagements with CBCRS, participants indicated that factors influencing sustainable living, specifically the enablers and barriers referred to in Section 6.3.4, would influence, if not (de)activate, intentions to participate. Participants identified that measures should be taken to maximise the enablers of sustainable living, while action should be taken to minimise the barriers. These relationships influencing participation in CBCRS is illustrated in Figure 7.1.

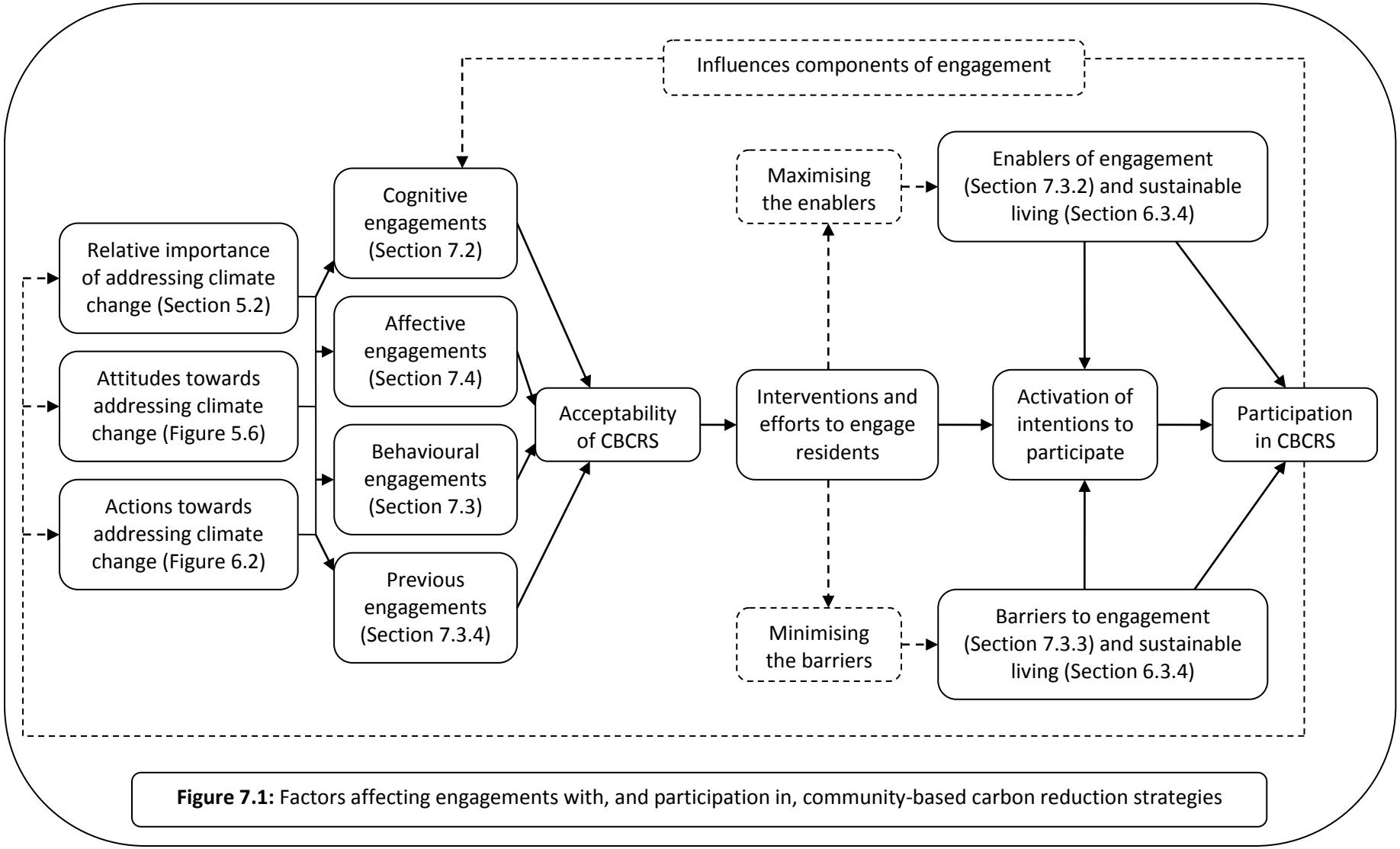


Figure 7.1: Factors affecting engagements with, and participation in, community-based carbon reduction strategies

CHAPTER 8: ADDRESSING CLIMATE CHANGE AT THE COMMUNITY LEVEL

8.1. CONTRIBUTIONS TO THE FIELD OF ADDRESSING CLIMATE CHANGE

Despite the growth of CBCRS, there has, to date, been very little empirical research into their development; the enablers of, and barriers to, participation; and methods of engagement in such projects (Seyfang, 2009). The introduction of CBCRS in the UK has been unsystematic and for this to become a widespread mode of practice, better understandings of public engagements with such initiatives are required (Rogers *et al.*, 2008). Continual monitoring and research on a longitudinal nature is required to investigate the efficacy of CBCRS, and the durability of attitudinal and behavioural changes to develop a robust evidence base that is rooted in the practicalities of the low-carbon lifestyle transition (Peters *et al.*, 2010).

This research has contributed to emerging and continual research extending our understanding investigating public engagements with addressing climate change and CBCRS that aim to facilitate a transition to sustainable low-carbon living. As such it has addressed the four research questions in Section 1.6, utilising a mixed methods approach to provide breadth and depth of understanding, and explored: (1) the diverse attitudes towards addressing climate change; (2) the measures that residents (in communities with, and without, a CBCRS) utilise to reduce their carbon emissions and live (more) sustainably; (3) the extent to which residents are aware of, and accept, CBCRS in their communities; and (4) the ways in which residents do/would engage with addressing climate change at the community level, and the reasons underpinning choices of (non)participation in a community approach aiming to facilitate, increase and maintain sustainable lifestyles. This chapter serves as a conclusion to this study and states the contribution to understandings of addressing climate change at the community level and the implications for future research, policy and practice.

Whilst providing an in-depth understanding to how the public understands, and responds to, (addressing) climate change, this research also explores the nature of

public engagements with, and participation in, CBCRS. The strength of this research lies within three main contributions; related to its (1) theoretical contributions to understanding public engagements with addressing climate change at the community level; (2) methodological contribution; and (3) timing of the presentation of these results and their practical implications for engagements with CBCRS.

8.1.1. Theoretical contributions to addressing climate change

Previous research has so far failed to explicitly explore public engagements with community-based sustainability intiatives that ground practices towards addressing climate change. In this thesis, this shortage has been addressed and findings are presented from a detailed mixed methodological study of how the public comprehends, and responds to, addressing climate change whilst also exploring the ways in which the public engage with, and participate in, CBCRS. Consequently, the first contribution of this study is that it explores what people know, feel and do with respect to addressing climate change at the community level.

Specific findings contributing, new knowledge to the discipline of addressing climate change and, to our understanding of how the public comprehends, and responds to, CBCRS are discussed in this chapter. Yet, while some findings are consistent with previous research, other areas are difficult to situate within other studies, particularly as explorations of engagements with CBCRS are an under-researched area of investigation. Few studies have researched the acceptability of community projects (Schweizer-Ries, 2008), and attitudes towards particular community projects, yet these studies have specifically focused on community renewables (Rogers *et al.*, 2008; Peters *et al.*, 2010). In this study, interesting differences have emerged indicating how public attitudes towards *addressing* climate change within local communities have changed over time. This thesis therefore contributes to our understanding of how the public comprehends, and responds to, addressing climate change at a particular point in time, which also allows for other studies to make reference to the findings in this study.

Within this first contribution, this thesis provides new understandings in a number of ways, highlighting a number of important findings that have substantial implications for the development of community-based activities (Tables A10.1 to A10.4). These contributions thus represent fundamental advances in knowledge and understanding of the ways in which people engage with addressing climate change at the community level, and how communities can transfer, and apply, these findings to encourage meaningful engagement and participation amongst residents in CBCRS. As such, the value of these fundamental advances lies within their ability to identify and address barriers to action to support community carbon reduction activities, and is of direct benefit to communities seeking to build, and sustain, or even refresh, effective citizen participation in CBCRS. Therefore, whilst the findings from this research provide new understandings about how the public would, and do, (not) engage with addressing climate change at the community level, they have a practical application to practicing communities that have, or are considering establishing, CBCRS. These practical applications pertain to the expectations, practicalities and realities of how to actively and meaningfully engage residents, demonstrating what will, and will not, work to encourage and sustain participation.

The findings in this study suggest that there is a substantial uncertainty about CBCRS amongst the public and their understandings of what such projects are and do. Whilst this uncertainty may be a result of the unsystematic introduction and varied approach of CBCRS, it presents practicing communities with significant barriers from the outset. Surprisingly, this result arises from community projects that have been grounded in practice for a number of years and indicates that individuals do not understand the potential multitude of carbon reduction activities that are occurring within their own communities. To counter this lack of awareness and understanding of what CBCRS are, and do, interventions should be continually employed to raise these basic cognitive engagements. Specifically, awareness raising campaigns (such as communication campaigns, leaflets, banners and posters) and face-to-face interactions with trusted members of the community would serve to increase the level of understanding of local carbon reduction activities disseminated through the community network.

Whilst this may be a basic requirement to increase levels of awareness, CBCRS should go further to counter the perceived “mundane” and “boring” associations and utilise creative solutions to stimulate considerations of participation. These actions would contribute towards addressing the “information-vacuum” and present local sustainability related activities as exciting, stimulating, socially acceptable and “sexy”. For example, individual narratives of personalised connections with community projects, including what they mean to residents; how they personally participate; positive stories of change; the ways in which participation has multiple positive outcomes and the subsequent emotional and behavioural outcomes that result would thus encourage considerations of participation.

CBCRS were viewed as demanding collective action and participation by members of the community; the principle that it is the responsibility of all residents to ‘play their part’ to address climate change collaboratively in their own communities. Whilst local collaborative action is considered positively of CBCRS, failure to meaningfully engage the community with carbon reduction practices presents over time presents a significant challenge. To overcome potential feelings of isolation and “piggybacking”, CBCRS must continually ensure residents that others in the community are acting. This conclusion leads to employing more general public engagement methods related encouraging participation, including project meetings; social gatherings; raising awareness and demonstrating outcomes and goals. Engaging residents in activities with members of the community that they do, and do not, know would demonstrate that CBCRS do indeed require, and utilise, collective action.

The actions recommended above would similarly strengthen cognitive engagements reflecting the benefits of localising action that addresses climate change. Specifically, residents note that a project responds to local needs and priorities whilst imbued with the values of the community. This demonstrates that all CBCRS should be tailored to the individual culture of each community. This point may also address the embedded lack of awareness and understanding of what CBCRS are, and do, as a

facet of cognitive engagements. The identified “information-vacuum”, by residents, results in the “awareness-involvement gap”. Practicing communities need to be aware of this as these factors are not just relevant during the initial development of a project, but remain throughout its lifespan.

The organisation of a CBCRS was seen to be of paramount importance, and it was identified that each community should have a tailored approach, comprising of a group of trusted people that can encourage involvement and direct the project. In this study, there were concerns that one overall leader, unless appointed as a project manager, would be detrimental citing inadequate skills and experience to lead a project. To that end, communities should discover organisational and leadership models that are accepted by residents.

Affective responses are not commonly cited by previous research, or by CBCRS, yet they are an essential component to engagement with addressing climate change that residents readily identify. The importance placed on how individuals feel on a day-to-day basis strongly influences, and shapes, daily behaviour, and potentially lead, methods of participation in CBCRS. The value of understanding these engagements is that they provide a clear indication of how residents respond emotionally to particular aspects of addressing climate change at the community level. For practicing communities, it is essential that residents feel engaged, care about their participation in projects and feel interested and stimulated by the activities they are involved in. To ensure this is achieved, direct contact is required between participating (and non-participating) residents and those who organise and lead the project. Should residents not feel interested, or their interest wanes, new stimulating activities are required to engage individuals in creative ways to sustain participation.

The affective responses illustrated in Table A10.2 demonstrate that, overall, residents feel engaged with, and positively towards, CBCRS. Despite this, individuals acknowledge that there were a small number of negatives but these are negligible in comparison to the positive emotional response of being part of collective action and

feeling engaged with CBCRS. Given that the majority of academic research and practice-based outputs reporting the advantages, this demonstrates that residents do identify some negative elements, yet these are minimal. This new finding, whilst seemingly positive, is important. It demonstrates that individuals assess and evaluate community projects, predicated on their understanding of what CBCRS are and do.

For communities establishing, or established, practices it is of paramount importance to continually provide residents with the "right messages" of CBCRS, their activities and outcomes to strengthen the positive cognitive and affective engagements that individuals in this study indicate, and prevent negative engagements from dominating. This finding is of relevance to all community projects, not just those situated within practices of carbon reduction, as feelings of negativity could replace positive affective responses should these not be reinforced or replaced. Given that individuals comment that they feel positive towards feeling engaged with CBCRS, a diverse, stimulating, motivating programme of activities emphasising the collective and collaborative facets of a community project would address any negative affective responses from becoming embedded.

A substantial implication for CBCRS is to address a misconception by residents that participation in a project, even minimally, would automatically begin, and seen by themselves and others, to living sustainably or becoming "eco-friendly". This idealistic view is an issue that could potentially result in false engagements with CBCRS as "participants" perceive that by simply attending a small number of meetings or participating in one activity they have started to live sustainably. Practicing communities need to make residents aware of what comprises a sustainable lifestyle and how they can become eco-friendly. Communities could produce imaginative and creative ways to ensure that individuals are aware of the nature and form of sustainable lifestyles by exemplifying, and rewarding, best practice amongst residents. This would help to ensure that residents could refer to "Green Champions" who use, and promote, sustainable actions within their community so that local expertise of maximising opportunities to live sustainably is

not overlooked or ignored. This would not compromise initial excitement nor jeopardise potential sustained participation.

Whilst positivity and negativity are polarised affective responses, those individuals noting indifference are residents who could be actively engaged with CBCRS should effort (and resources) be expended on those who are viewed as generic "nonparticipants". This thesis strongly recommends against classifying all nonparticipants in this way, as distinctive differences are visible amongst these individuals. Through addressing the "information-vacuum" as specified earlier, CBCRS should identify the salient (environmental) concerns of residents and attempt to incorporate these within the project. This would demonstrate that CBCRS do indeed form a tailored approach within their communities and proactively and reactively respond to the needs and concerns of residents. Whilst each CBCRS may have a specific focus, practicing communities could incorporate additional salient concerns of residents by demonstrating that addressing one issue this could have spillover effects on addressing other issues, thus highlighting, and resolving residents concerns about, the multiple outcomes of projects.

Residents were concerned that the majority of people within their community held indifferent and ambivalent affective responses towards CBCRS, and suggested that strategically and slowly introducing a community project would serve to introduce and increase social norms to increase the acceptability of community carbon reduction practices. Seeking to introduce new social norms may be worthwhile for practicing communities, who want to create and build excitement for a CBCRS before its launch to stimulate widespread meaningful involvement, which encapsulates the concerns of the wider community, and not just those who are previously engaged in environmental actions. These recommendations could effectively engage a wider range of individuals, and encourage active participation should a project be established within a community that has introduced new, or increased, positive social norms.

This research has demonstrated that some individuals feel concerned, frustrated, angry and even disengaged, related to concerns they had about others' contributions and (non)participation (Table A10.2). Importantly, these conclusions have substantial implications for practicing communities, particularly when residents question "whose project" the CBCRS is. Whilst ownership and leadership of a project should ultimately lie with residents in the community, the diverse multifaceted nature of CBCRS may give rise to competing notions of control. To address concerns and fears of nonparticipation and lack of trust in the coordinators/coordinating committee, open and democratic procedures should be followed and the leadership (whether a project manager or committee of community members) should be held to account. Therefore, the management of a practicing community should be held to account for the activities and outcomes of a project and judged on its efficacy and productivity by community members as part of a transparent, democratic, accountable participatory process, where residents share in real citizen participation, reflecting "partnership" or "delegated power" on Arnstein's (1969) ladder of citizen participation.

The strength of undertaking a range of activities demonstrates that CBCRS are: (1) willing to proactively and reactively meaningfully engage participants and nonparticipants in a continual process that does not end once the project becomes established; (2) sensitive and responsive to the needs and values of the community, creating a supportive environment for the community to share their feelings and experiences whilst seeking technical skills and information that help facilitate and sustain a transition to sustainable living; and (3) able to promote and stimulate sustained participation within (and beyond) the community through diverse activities. CBCRS need to ensure that participants' positive engagements are maintained, and feelings of concern, frustration and disengagement are taken into account and resolved openly, whilst being flexible to suggested changes by residents.

The cognitive and affective engagements outlined demonstrate the multiple and complex interactions with behavioural engagement and participation. Acknowledging that these three dimensions are not related in a linear fashion

(Whitmarsh and O'Neill, 2011), the conclusions here demonstrate that they do indeed comprise complex behavioural ecologies. There are limited explorations in previous research indicating what individuals are specifically willing to do in order to participate in CBCRS, and how this is evaluated in terms of Arnstein's (1969) ladder of citizen participation. Understanding what residents are willing to do, or not, to participate in CBCRS is of paramount importance to practicing communities, and the roles that residents wish to undertake should not be overestimated by CBCRS.

Arising from their level of acceptability of CBCRS, residents are keen to promote and encourage participation amongst other community members, related to awareness raising, publicity and attending meetings. It is clear that these identified methods have different meanings and anticipated outcomes. For example, reference to publicity and encouraging younger generations aim to promote engagement amongst others indicated "partnership" whereas attendance at meetings for their own individual needs reflects tokenistic means of participation related to "informing" or "consulting". Yet, these categories do not take into consideration the role of specific meetings, as residents indicate that attendance at meetings is not just simply gathering information but rather discussing and agreeing on the overall approach and activity of a project.

This level of citizen participation increases from mere tokenism to citizen power where individuals discuss the direction and resources of the project. Given that residents identify a range of participation methods, CBCRS need to be flexible in offering community members any, and every, opportunity to engage with community carbon reduction to contribute and feel as engaged as possible. This may mean that individuals wish to take on either smaller or larger roles than anticipated. Whilst this may present specific challenges to CBCRS, this should be viewed positively as residents are willing to engage, and participation methods can change over time in response to personal, social and economic contexts. In response, CBCRS need to apply volunteers and their skills wisely to drive creativity and innovation within projects and meet their objectives. This method may have specific value to engaging nonparticipants. Given that communities have particular values and

networks, disseminating positive stories of participation may support the recruitment of individuals who previously had little knowledge or interest in getting involved. Therefore, narratives illustrating the multifaceted benefits of participation could support engaging a wider range of residents across the community, thus increasing participants, activities, skill base and, potentially, outcomes.

In Table A10.3, the factors identified by residents can be viewed as the expectation of what they consider to encourage or inhibit (behavioural) engagement with CBCRS, whilst the evaluation indicates the reality and whether maximising and/or minimising these factors would contribute to supporting participation in community projects. Should these be addressed transitions to sustainable living may be maintained over long-term time periods, thus addressing the implication raised by Alexander *et al.* (2007); that the challenge to transition initial excitement of a project to sustained participation can be achieved through addressing these enablers and barriers, and implementing effective interventions. These conclusions have specific value to practicing communities detailing what could work to engage residents in CBCRS and what will not work.

The evaluations of what would, and would not, work to behaviourally engage individuals with CBCRS indicates that promotions; advertising; visual stimuli; tailored information; education; and specific awareness raising would support participation. These interventions could primarily be viewed as seeking to alter residents' cognitive engagements with CBCRS by disseminating generic information of what projects are and do, but also providing specific guidance (through tailored information and education) to personally engage with schemes in particular ways. Whilst these methods may seek to principally address the "information-vacuum" and subsequently the "awareness-involvement gap", they can also engage affective responses.

Therefore the value of applying these interventions is twofold. Firstly, applying a mixture of these interventions would comprise a multifaceted approach to increasing involvement across a heterogeneous public that need to (re)engaged in

diverse, exciting ways. Secondly, these measures would provide residents with specific, personalised, motivating and meaningful messages that attempt to stimulate engagement across time periods. Implementing these interventions on a single occasion is not sufficient to reinforce positive and motivating messages to facilitate and sustain engagement. These measures need to be applied continually to sustain participation, as engagements could reverse and slide back to previous unsustainable habits.

Conversely, financial incentives, generic information used sparingly and mass media campaigns would not encourage participation. These measures have been implemented elsewhere and have been found to result in little or no behavioural change amongst individuals (Abrahamse *et al.*, 2007). It is based on these evaluations that whilst residents may identify these to be enablers of behavioural engagement, these approaches would fail to meaningfully engage residents and would reinforce superficial, meaningless notions of involvement. Therefore, it is recommended that practicing communities do not employ these methods to engage the public with CBCRS.

Despite identifying specific enablers and barriers to behavioural engagement, residents indicated what encouraged and inhibited them from sustainable living more generally (Table A10.4). Whilst some of these factors are beyond the control of practicing communities, they will inevitably impact upon engagement with addressing climate change more widely and at the community level. Thus, CBCRS need to be aware of, and respond to, these factors and identify how to maximise the enablers of, and minimise the barriers to, sustainable living, to support wider engagement with addressing climate change.

The concept of sustainable living was associated with taking sufficient actions. This clearly presents an opportunity to clarify what actions are required to live sustainably. To complement enablers to behavioural engagement with CBCRS, communities are well placed to provide clear understandings of what comprises a sustainable lifestyle and stories of good practice. As indicated previously, narratives

identifying Green Champions within the community alongside the dissemination of tailored information and a face-to-face “pop up shop” to respond and address queries from residents would meaningfully engage community members. The role of such “pop up shops” provides a human interface, rather than individuals having to seek information from print or online material, and feedback which can be used by residents to (further) act upon. This would also address the difficulties experienced by some residents who note the difficulty of integrating actions into daily routines when living in a “disposable, time-pressured society” where CBCRS can illustrate creative ways for individuals to participate in a project that is not challenging and time consuming, yet stimulating, impactful and engaging demonstrating collective action amongst residents.

Yet, this research highlights wider challenges beyond the scope of control of communities. For example, residents noted that media outlets reported various stories confusing individuals, instilling fear, and scepticism while not providing much encouragement for addressing climate change, which may desensitise individuals’ concern and action. This conclusion has clear implications for climate communications and indicates that the public are aware of the “false balance” in the reporting of climate change amongst corporations (The Guardian, 2014). There is thus a need for improvements to communication and editorial efforts to prevent the publication of misleading information to, and consequent misperceptions amongst, the public.

These enablers and barriers demonstrate what individuals believe “what works” for them, in their communities. These conclusions do have real value and applicability as residents see themselves as the “experts” within their community, and saw this as an exercise to identify problems and barriers, claim ownership of the decision-making process, and implement changes to maximise and/or minimise specific factors to ensure local sustainability. This value and applicability is substantial, as it demonstrates that individuals can become meaningfully engaged in a low-carbon society, not just as a consumer but also as a planner, coordinator and decision-maker.

These fundamental advances in knowledge have significant implications of CBCRS, yet they also provide opportunities to explore alternative methods to meaningfully engage the public with addressing climate change at the community level, cognitively, affectively and behaviourally. The value of these conclusions is twofold: (1) providing a new understanding of the ways in which individuals would, or would not, engage with addressing climate change at the community level; and (2) their ability to identify implications and address barriers to meaningful citizen participation with CBCRS whilst maximising the enablers to engagement. This is of direct relevance, and importance, to practicing communities as understanding the ways in which the public *want* to be engaged and *how* they can be engaged successfully is of direct benefit to the future of CBCRS, particularly to turn initial excitement in a project to sustained and meaningful participation. The conclusions above clearly indicate multiple ways to engage participants and nonparticipants alike. These recommendations are transferable and can be integrated in to communities considering establishing a CBCRS or communities that have been grounded in practice for some time seeking to (re)engage residents (should initial excitement and involvement have waned).

The incremental advances in this study demonstrate the ways in which (addressing) climate change is understood, articulated and responded to. Specifically, individuals demonstrated reluctance in focus group discussion to rank environmental issues and noted that their concern was predicated on observation and experiences rather than education and pro-environmental values. Thus, residents relate their perspective to real world events demonstrating a reflective concern noting continually worsening global natural hazards that were caused by, or related to, climate change. Yet, individuals were more aware of global environmental events rather than local occurrences, reflecting media attention and uncertainty of local impacts of climate change. Therefore, research and practice should uncover and disseminate the local impacts of climate change. Whilst this recommendation may be beyond the scope of CBCRS, its value lies within its ability to overcome the “psychological distance” of climate impacts (Devine-Wright, 2013). This would demonstrate that impacts of

climate change are not distant in time and space, and have consequences for communities in the UK.

Residents indicated they held genuine concerns and rational doubts about elements of (addressing) climate change. Such doubts included the efficacy of, and uncertainty of implementing, solutions. Residents noted that these doubts comprised notions of scepticism. This may result from the "false balance" of climate change reporting in the media and the uncertainty of (the impact of) mitigative and adaptive solutions. Overcoming these uncertainties would involve addressing the balance in climate reporting with increasing narratives on the solutions to climate change. CBCRS have the potential to address this 'scepticism' in creative and meaningful ways and can highlight ways that individuals can undertake behavioural responses and result in multiple advantages. Should individuals choose to undertake measures, CBCRS could provide tailored information and feedback to provide continual monitoring and support to individual behavioural responses. This process could actively lead to processes of self-perception, where individuals view actions positively and infer internal states from external cues (Verplanken, 2011), in this context intervention from CBCRS.

Focus group discussions demonstrated that individuals do not perceive reducing their carbon emissions as a simple deliberation of positives and negatives. This indicates that individuals rather consider the reasons *why* they should take action, the barriers that prevent them from taking action, creating pro-environmental habitual behaviours, and forcing others to take sustainable actions. It is these considerations that allow CBCRS to engage individuals through these cognitive and affective responses. Using interventions such as tailored information, advertising and project activities, CBCRS can illustrate how barriers to action can be overcome and enablers maximised (Tables A10.3 and A10.4); encourage others to take sustainable actions; and facilitate and sustain behavioural responses and participation. The value of this conclusion lies within how practicing communities respond to the beliefs held by residents and their ability to encourage individuals to take measures.

In this research individuals clearly articulated their perspectives concerning *addressing* climate change and considered whether, and how, the issue should be addressed, rather than simply reflecting upon the causes and impacts. This fundamental advance demonstrates the ways in which the public comprehend, and respond to, climate change; illustrated in two new theoretical frameworks (Figures 5.6 and 6.2). These new findings have multiple implications for research exploring public attitudes and actions towards (addressing) climate change as well as policy and practice environments. They illustrate the differing attitudes towards addressing climate change and the multiple levels of action that the public take, and should be be applied to different individuals in communities, organisations and projects within and beyond the UK. The strength and value of these theoretical frameworks are illustrated in Box 8.1.

Box 8.1: The strength and value of Figures 5.6 and 6.2 as theoretical frameworks

Figure 5.6 illustrates the diverse attitudinal positions towards addressing climate change and Figure 6.2 demonstrates the ways in which individuals behaviourally respond to climate change. Their strengths and values are highlighted as follows:

1. Applicability: Figures 5.6 and 6.2 have direct applicability, and transferability, to wider publics. The theoretical frameworks include the heterogeneity of diverse publics and categorised into attitudinal and behavioural positions whether, or not, they believe in the existence of (anthropogenic) climate change or take measures. Therefore, the value of these theoretical frameworks is their inclusivity of individuals who: do believe in climate change; may share elements of scepticism; and do, or do not, take action to address climate change.

2. Flexibility: The theoretical frameworks are flexible in nature. This is to say that they are not static and can take into account changes in attitudes and behaviour by individuals. The strength of this dimension adds further value to its applicability given it is not restricted and can be applied, in research or practice, multiple times.

3. Usability: Following from the first two strengths, these theoretical frameworks have substantial value in terms of usability, whether for research of practice-based purposes. Specifically, they can be applied to individuals within communities, organisations or participants in a CBCRS. The application of these frameworks are therefore widespread, and can be used as a platform to explore ways to meaningfully engage individuals with addressing climate change according to their attitudinal or behavioural position. Consequently, their application in differing public and private environments would improve understandings of public engagement techniques in everyday settings.

4. Validity: The theoretical frameworks highlighted in Figures 5.6 and 6.2 were found

to be accurate and reliable when analysed through quantitative and qualitative data collection and analyse. This demonstrates their validity through the use of a mixed methods research design. Therefore, the strength of these frameworks is their application to diverse individuals, in multiple settings and analysed through both quantitative and qualitative research methods.

With respect to behavioural responses, participants expanded upon their current actions and reflected more deeply about their lifestyle and their considerations to take measures in the future. This demonstrates that some individuals are substantially engaged with addressing climate change. Yet this also provides CBCRS with an opportunity to encourage and sustain individual behavioural responses alongside potential participation in projects. Should CBCRS support residents in this way, this would provide encourage meaningful engagement with addressing climate change over time, rather than residents reflecting upon their previous and current activities with little consideration over what they may choose to do in the future. This would allow individuals to be cognitively, affectively and behaviourally engaged to the extent where this creates new norms and habitual behaviours. To promote consideration, and uptake, of behavioural responses presently and in the future, practicing communities should attempt to not only utilise interventions that provide continual monitoring of energy use for residents to act upon but also exemplify measures that can be taken on top of existing actions.

In this study, participants unknowingly discussed their actions and the resultant rebound effects. Surprisingly, participants debated these in almost a jokingly, yet positive manner whilst noting they were aware of their relative (un)sustainability. Should the causes of climate change be addressed within the activities at the domestic and community level, such rebound effects and unsustainable habits need to be altered and resolved. CBCRS are ideally placed to counter rebound effects through employing interventions that seek to highlight, manage and resolve these whilst creating or redefining sustainable habits, so that individuals do not slip back into unsustainable behaviours. To that end, multiple interventions could be employed during the immediate and long term to manage and remedy rebound effects such as through the creation of “pop up shops” and feedback.

The identified interventions suggested in this chapter employed by CBCRS to address a number of interrelated barriers to action seek to facilitate, increase and maintain sustainable living. This requires constant engagement from practicing communities with residents, and requires community members to engage with CBCRS. It would be insufficient, and counterproductive, for projects to reduce or even cease active attempts to meaningfully engage residents with addressing climate change after an initial period of time has lapsed. To mainstream sustainable development and address climate change, CBCRS clearly have a place within communities to encourage sustainable living from their initial development. The successful CBCRS is one that is both proactive and reactive to participants and nonparticipants alike, and utilises multiple interventions to engage individuals meaningfully with addressing climate change at the community level.

8.1.2. Methodological contributions to addressing climate change

This study's second contribution is the conceptual and methodological approach. The approach taken in this study, therefore, distinguishes itself apart from mono-method research providing both breadth and depth of understanding and utilised the three dimensions of engagement to explore public engagements with CBCRS. This focus on cognitive, affective and behavioural engagements provided a structure to understanding the ways in which individuals comprehend, respond to, and participate in, community-based sustainability initiatives. This approach provides new understandings of how the public conceptualises CBCRS, and how these projects support individual efforts to address climate change. By verbalising their feelings and experiences of engagement and participation, individuals provided a detailed account of the diverse personalised involvements with CBCRS. Whilst affective engagements towards addressing climate change have often been disregarded, individuals' feelings have important implications for the development and success of CBCRS and provide equal focus to all dimensions of engagement.

Thus, the strength and value of this approach demonstrates that the value-laden, subjective feelings of individuals are just as important, if not more so, than cognitive

and behavioural engagements as these are closely related to notions of identity and values. Whilst acknowledging the interrelationships between cognitive, affective and behavioural engagements, it is the complex, fluid, ever-changing feelings towards addressing climate change that shape, and potentially lead, methods of participation in CBCRS. The strength of this conceptual and methodological approach in this thesis provides an in-depth insight into the diverse and powerful impacts of individual emotions.

8.1.3. Practical applications and implications to addressing climate change

The study's third contribution is its timing of the presentation of results. The value this research has and its practical implications and applicability to practitioners and/or practicing communities that have, or are considering establishing, CBCRS. This study illuminates the opportunities and challenges associated with creating CBCRS focusing on the nature and form of a project; methods to meaningfully engage residents; and responding to the needs of individuals and their identified forms of participation. The strength of this application indicates what measures individuals are receptive towards and what interventions will (or will not) effectively support behavioural changes (Table 8.4), as well as those that can be employed to encourage involvement in community projects (Table 8.3).

Whilst these findings are of particular interest alone, these methods are evaluated in terms of their ability to facilitate and sustain behavioural change, sustainable living and engagement with CBCRS, whilst minimising the barriers. The value of this applicability to CBCRS is to help identify challenges and methods that do not encourage or sustain participation and to illuminate methods that help to stimulate and maintain meaningful engagement in projects that have been established or grounded in practice for some time. Applying these conclusions to practice would allow this research to have a real-world impact that seeks to support transitions to local sustainability and encourage spaces for effective citizen engagement with, and participation in, addressing climate change.

While this thesis presents a substantial, and novel, contribution to knowledge within the field of addressing climate change, it should be acknowledged that this thesis should not be read, and used, for the advancement of understanding in a strictly academic domain only. The respondents and participants in this study demonstrated a genuine interest in engaging with addressing climate change. This thesis has a value beyond the academy that may also be used in the public sphere; by policy-makers and practitioners who are considering establishing, or have already established, CBCRS which may provide suggestions on how to engage the public with addressing climate change in their communities (Figure 7.1).

8.2. LIMITATIONS OF THE STUDY

While this research presents considerable and new contributions to addressing climate change at the community level (outlined in Section 8.2), it also experiences limitations.

The only influence from existing theoretical concepts in this study was adapting the TPB to examine the influences on carbon reduction behaviours, and no theoretical models were tested. Although this may be considered a limitation of the study, this approach is in keeping with the philosophical underpinnings of this thesis (Chapter 4); where the choice of approach, methods and procedures best answer the research questions posed. The analysis of survey and focus group data draws upon survey respondents and participants "real words", which were interpreted in the context of previous research and theoretical concepts where applicable. However, this study has generated interesting results to open questions than more theoretical oriented approaches may have overlooked or failed to encounter. Future research should build upon the results on this study to extend understandings in addressing climate change at the community level.

Numerous studies measure environmental perspectives using predefined attitude statements (i.e. Whitmarsh, 2009a), such as those used in the NEP (Dunlap *et al.*, 2000) and the Scepticism Scale (Corner *et al.*, 2012). This study chose not to use predefined attitude statements and instead chose to measure respondents'

attitudes using more open-ended questions. Despite the limitations of not undertaking attitude battery style responses to a range of behavioural responses, the questions used in the questionnaire allowed for statistical analysis to take place. Yet, qualitative research provided greater insight and justifies the use of a mixed methods design, which seeks both breadth and depth. This limitation leads to the recommendation of future studies using qualitative research to explore additional dimensions of addressing climate change at the community level (Section 8.3.1).

The research conducted in this research was principally focused on two CBCRS and one non-CBCRS in the West Midlands and North West of England. While this study generated findings which extend current understandings on addressing climate change at the community level, future research should extend this type of study, in order to become more representative of national attitudes and actions towards addressing climate change, and public engagements with, and participation in, CBCRS. A study focusing on national perspectives would build upon the findings in this study and provide an indication, and reasons, for levels of acceptability towards, and (potential) participation in, community-based sustainability initiatives.

One substantial limitation of this research is its approach to exploring people's attitudes and actions, which relies on self-reporting of behaviour. Self-reported measures of behaviour may not accurately reflect actual behaviour of participants (POST, 2010). Despite inconsistencies occurring between self-reports and actual behaviour, survey respondents and focus group participants' perspectives towards behavioural responses illustrate new dimensions to considerations of addressing climate change. To offset this limitation, future research should incorporate more objective measures such as observational methods and domestic energy readings.

Whilst this study's second main contribution is its conceptual and methodological approach (e.g. the application of engagement theory), reflecting further on this study, should this research be replicated there are a number of ways in which that alterations could be made to the research lens, philosophical framework and methodological approach. Shove (2010a) argues that substantial research, policy and

practice are predicated on the ABC of social change, a limitation that can also be applied to this study. Thus, studies seeking to explore public engagement with addressing climate change at the community level may choose to situate this research within a different theoretical lens, such as social practice theory (Beck, 2010; Shove, 2010a; Shove, 2010b; Hargreaves, 2011; Shove, 2012) or Actor-Network Theory (Law, 1992; Murdoch, 1998; Latour, 2005).

Whilst this study has exemplified how individuals (can) engage with community projects, it has not explored the ways in which residents can easily transition between acting as a participant and nonparticipant. Thus, Actor-Network Theory may provide a "new kind of geographical analysis" for addressing climate change at the community level with specific attention paid to spaces of 'prescription' and 'negotiation' (Murdoch, 1998: 357), with a particular emphasis towards how community networks influence carbon reduction perspectives and practices. This, however, will require an understanding of the ways in which individuals engage in CBCRS as exemplified in this thesis. This area of research may provide answers to the issue raised in this study indicating an "awareness-involvement gap" (Section 7.3.1.2). Moreover, the value of this research may indicate the specific elements of a "network" or (factors that comprise a) CBCRS that help to form and maintain a project, whilst also identifying components that lead to its (potential) demise.

In addition to exploring addressing climate change at the community level and situating this research within different theoretical lenses, studies attempting to replicate this research may choose to utilise different philosophical frameworks and methodological approaches. In this context, other studies may wish to employ either a quantitative or qualitative methodological approach with a complementary philosophical paradigm that may apply different techniques to similar research goals or contexts in novel ways. For example, a study of this nature may choose to compare and contrast the differences between urban and rural communities; comparative or opposing CBCRS (i.e. Transition Towns); or recently and well established projects.

8.3. DIRECTIONS AND RECOMMENDATIONS FOR EDUCATION, RESEARCH, POLICY AND PRACTICE

8.3.1. Future directions and recommendations for education and research

It was clearly identified that while understanding the scientific evidence of climate change is important, the emphasis should be placed on (communication of) measures taken to *address* climate change. Identifying, exploring, and engaging with, CBCRS in educational institutions (i.e. schools, colleges, and universities) could allow for such projects to become a stronger part of the fabric of everyday life and transition towards a normative concept (a desirable state). Engaging students, irrespective of educational level, with CBCRS provides a case study of a social approach, as opposed to favouring technological solutions. This thesis recommends exemplifying the role of CBCRS and their impacts within educational curricula, and exploring how students conceptualise, identify and respond to alternative forms of living.

Focus groups yielded interesting findings relating to public perspectives towards addressing climate change at the community level and recommends that future research utilise this approach. In doing so this research begins to address a significant gap in academic literature and practice pertaining to employing qualitative studies exploring engagements with CBCRS (Mannarini and Fedi, 2009). Utilising qualitative approaches allow participants to express their beliefs, feelings and actions in their own words and expose how individuals comprehend, and respond to, community responses by drawing on different forms of knowledge, values and experiences. Focus groups are well placed to explore the multi-faceted nature of engagements with, and participation in, CBCRS.

The area of lifestyle choice has largely been ignored and regarded as being too subjective, ideological and value-laden, or simply too intractable to be amenable to policy intervention. Given the rise of local sustainable development and the emphasis placed on individual actions for sustainability, incorporating a range of behavioural responses is necessary for transitions towards sustainable low-carbon

living Despite this, this study has shown that participants consider a number of enablers and barriers to sustainable living, and if addressed, would encourage them to take (more) action to address climate change. Future research should explore the ways in which enablers to sustainable living can be maximised and barriers minimised, along with effective methods of communicating changes to individuals.

One of this study's contributions to the field of addressing climate change has been the application of the three components of engagement (cognitive, affective and behavioural) to explore residents' involvement with CBCRS. Applying this theory as a structure has allowed for clearly identifying the multiple ways in which individuals can, and do (or would), engage with addressing climate change. The strength of this application allows for each dimension of engagement to be explored equally without focusing predominantly on what people know and do, whilst ignoring the role of affective engagements. This contribution to knowledge is presented at a pivotal moment in the development of CBCRS and challenges related to facilitating sustainable living and maintaining participation in such projects. Moreover, this contribution is significant theoretically, methodologically and empirically, and demonstrates that there is substantial merit in using an engagement theory approach to explore the ways in which people engage with participatory approaches to address climate change. Future research should build upon the findings in this exploratory study and explore public engagement with CBCRS in more depth, further exploring the reasons why individuals do, or do not, participate in such projects.

Participants in this study highlighted that public, policy and practice expectations and experiences of addressing climate change at the community level are not aligned, or orientated towards the same outcome. Future research might explore these commonalities and differences between these spheres, and the implications this may have on engaging the public with addressing climate change. Such research may highlight discrepancies between these expectations and experiences, and suggest ways to bridge the public-policy-practice divide. At some level, this may allow for CBCRS to become accepted more generally and for wider social

transformation that may allow for the scaling up and replication of grassroots initiatives mainstreaming sustainable development.

Box 8.2: Recommending, and reiterating, the importance for continual (action) research

Alongside continual monitoring and investigation of engaging with addressing climate change at the community level, action research should be undertaken to explore the efficacy of interventions that participants and nonparticipants in CBCRS respond to, in order to enable sustainable living. This recommendation has two strands: (1) continuous study of the changing nature of multifaceted engagements with CBCRS, and (2) action research exploring how to engage individuals with participating in local projects. There has been little empirical investigation in this area, and it is important to learn how and why potential participants envisage taking on the role of participant in a CBCRS (Rogers *et al*., 2008). This practical approach of exploring possibilities for participation directly with members of the public in their communities has been advocated by Stern (2000) to enable promising strategies to be identified before undertaking action-based research (Rogers *et al.*, 2008).

Once an evidence base has been established, action research could, and should, explore techniques to promote participation and tailored interventions that would sustain engagement in CBCRS (Abrahamse *et al.*, 2005; Alexander *et al.*, 2007; McNiff and Whitehead, 2011). Friedman (2006: 131) argues that this approach, defined as "action science" incorporates practical problem-solving with theory-building and change. Here, researchers and practitioners create communities of inquiry and practice (Friedman, 2006; McNiff and Whitehead, 2011) to improve community carbon reduction engagements and practices. An action-based approach would add significant value theoretically, methodologically and empirically to the field of addressing climate change at the community level.

8.3.2. Recommendations for policy and practice

Engaging with communities on behalf of those who want to implement policy, and those that are putting it into practice, involves considerable challenges, some of these highlighted in this thesis. These practices involve three distinctive dimensions of engaging the public with addressing climate change, from the perspective of those wishing to implement policy and practice.

Firstly, those wishing to implement policy and practice (e.g. CBCRS) should be aware of the local systems, structures and values within each community to tailor approaches for the benefit of those residents, who will ultimately deliver reductions

in carbon emissions through participation. The importance placed on addressing major environmental issues such as climate change necessitates an understanding of how individuals respond to, and engage with, (or even ignore) CBCRS. The barriers to behavioural engagement in Section 7.3.3 demonstrate that those wishing to engage communities with addressing climate change, must first engage with individuals within the community to understand their perspectives towards: (1) (addressing) climate change (their attitudes and actions); (2) notions of sustainable living, visions of sustainable lifestyles, it's enablers and barriers; and (3) acceptability of community approaches, methods of engaging participants (cognitively, affectively and behaviourally), and their identified methods of (non)participation. This study has illustrated that within a group forum, individuals have much to say about addressing climate change and sustainable living and, in turn, want to be heard (Box 7.5). This recommendation would allow members of a community to state their own needs and values whilst permitting them to participate in decisions that directly influence the direction of CBCRS. This will help to bridge the public-policy-practice divide.

Secondly, from the perspective of those wishing to implement CBCRS, engaging with public perspectives towards addressing climate change and sustainable living should not stop once a community-based sustainability project has been implemented. Instead, long-term engagement and monitoring are vital features if we are to fully understand the contribution of community-scale actions to mitigate climate change (Gerrard, 2010; Peters *et al.*, 2010). Specifically, this would extend our understanding relating to how attitudes and actions towards addressing climate change form, alter and adapt to CBCRS and (non)participation in community-based sustainability projects. Particularly, this recommendation would also seek to unravel attitudes towards CBCRS in more depth such as acceptability, resistance and reluctance. This would provide a theoretical and applied approach and understanding of the influence of CBCRS over short, medium and long term periods, whilst also supporting the development and tailoring of intervention methods used to facilitate, increase and maintain sustainable lifestyles. Additionally, this recommendation for practice would lead to the improvements, particularly the efficacy, of interventions used to encourage pro-environmental actions.

Thirdly, this thesis recommends that those wishing to implement CBCRS should respond to questions and queries raised by participants. This recommendation is an outcome of participants' comments in Section 6.3.4.9 and Box 7.5, stating that they believed "pop up shops" in communities providing advice and answers to questions relating to actions taken to address climate change would be beneficial for the community, act as an enabler to undertake behavioural responses and potentially encourage participation in CBCRS. Individuals almost demanded engagement from policy makers and practitioners to provide them with answers to their questions and feedback on the efficacy of their actions and provide a platform for discussion. Although participants are uncertain who can provide them with answers to their questions and feedback, CBCRS clearly have a role in addressing this vacuum in participants' understanding, which could encourage sustained behavioural responses and participation in such projects. This would further address the problem of identifying ways in which to turn initial excitement of involvement in to sustained methods of participation in CBCRS, providing such projects with both proactive and reactive elements to their nature and responding to the needs of local residents.

Participants identified creative solutions to enable sustainable living and participation in CBCRS. Therefore, community projects should experiment with new forms of engagement and participation identified by local residents. Experimentation could comprise a range of interventions, for example; utilising tailored information about energy use and conservation or "pop up shops" to provide a face-to-face service responding to residents' questions. It is acknowledged that this would have substantial benefits, principally allowing for genuine consultation and citizen control of CBCRS whilst encouraging flexibility and openness within community-based sustainability projects (Arnstein, 1969; Mannarini, 2011). Consequently, the creative thinking and energies of local residents should be embraced by existing or new CBCRS, which could enable community projects to reach a wider audience and encourage greater quantity and quality of participation.

Implementing CBCRS should take into account long-term attitude changes and willingness to take behavioural responses to address climate change. In order to reach large, and multiple, audiences within the community, this thesis recommends identifying the types of attitudes people hold towards addressing climate change (Section 5.5.2), the measures they currently take (Section 6.2.2.2) and would be willing to take (Section 6.2.2.1), and providing individuals with tailored information suggesting behavioural changes based on their attitude type and responses to action-related questions. This recommendation follows from the "Global Warming Six Americas" app, which provides tailored information on behavioural changes based on a survey (O'Neill and Boykoff, 2011).

This thesis also recommends that policy and practice explore the ways in which the public can, and indeed want to, be engaged with addressing climate change (at the community level). Implementing this recommendation should also take into account the reasons individuals provide for, and justify, nonparticipation in CBCRS. This dimension would extend understandings of (non)participation in initiatives where others have seemingly failed to take (non)engagement into account, such as Arnstein's (1969) ladder of citizen participation (Section 3.3.2). While this may also be a worthwhile avenue for research, the key value of this recommendation lies within its translation into practice, particularly towards active (relatively frequent, substantial and meaningful) engagement with sustainable living. This practice will be reliant upon an understanding of local attitudes; actions; systems; culture; and structures, alongside an appreciation of public consideration of the enablers of, and barriers to, sustainable living in a given area (Figure 7.1). This recommendation, however, will ultimately rely on multiple agencies working collaboratively (at the individual, community, and national level) (see Alexander *et al.*, 2007; Cave *et al.*, 2012) to identify, and implement, methods to stimulate meaningful engagement with sustainable living through the short term to the long term (see Mannarini *et al.*, 2010). The real impact of this recommendation, once (or rather; if and when) implemented, will be visible in the transition towards a maintained low-carbon, sustainable future.

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